Approval of Development Plan for
Batticaloa Municipal Council Area

I, Mahinda Rajapaksa, Minister for Defence and Urban Development, do hereby approve the development plan for the Batticaloa Municipal Council area having considered the recommendations made by the board of Management of the Urban Development Authority on 09.10.2013, by virtue of the powers vested in me under section 8F of the Urban Development Authority (amended) Act No.4 of 1982.

Mahinda Rajapaksa
Minister of Defence and Urban Development

Ministry of Defence and Urban Development,
No.15/5, Baladaksha Mawatha,
Colombo 03.
19.05. 2014

ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය

අති විශෙෂ

The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 1868/8 - 2014 ජූනි මස 23 වැනි සඳුදා - 2014.06.23

No.1868/8 - MONDAY JUNE 23, 2014

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

APPROVAL OF THE DEVELOPMENT PLAN FOR KALMUNAI MUNICIPAL COUNCIL

PUBLIC are hereby informed that the Development Plan prepared under Section 8A of the Urban Development Authority (Amendment) Act, No. 4 of 1982, for the Urban Development Area of Kalmunai Municipal Council has been approved on 19th May 2014, by Hon. Mahinda Rajapaksa, Minister of Defence and Urban Development by virtue of powers vested on him under Section 8 "F" of the said Amendment Act.

NIMAL PERERA,
Chaiman,
Urban Development Authority.

03rd June 2014.

Approval of Development Plan for Kalmunai Municipal Council Area

I, Mahinda Rajapaksa, Minister of Defence and Urban Development, do hereby approve the development plan for the Kalmunai Municipal Council area having considered the recommendations made by the board of Management of the Urban Development Authority on 09.10.2013, by virtue of the powers vested in me under Section 8 F of the Urban Development Authority (amended) Act, No. 04 of 1982.

MAHINDA RAJAPAKSA,
Minister of Defence and
Urban Development .

Ministry of Defence and Urban Development,
No. 15/ 5, Baladaksha Mawatha,
Colombo 03.
19th May 2014.

07- 207/ 1

APPROVAL OF THE DEVELOPMENT PLAN FOR BATTICOLOA MUNICIPAL COUNCIL

PUBLIC are hereby informed that the Development Plan prepared under Section 8A of the Urban Development Authority (Amendment) Act, No. 4 of 1982, for the Urban Development Area of Batticoloa Municipal Council has been approved on 19th May 2014, by Hon. Mahinda Rajapaksa, Minister of Defence and Urban Development by virtue of powers vested on him under Section 8 "F" of the said Amendment Act.

NIMAL PERERA,
Chaiman,
Urban Development Authority.

03rd June 2014.

Approval of the Development Plan for Batticaloa Municipal Council Area

I, Mahinda Rajapaksa, Minister of Defence and Urban Development, do hereby approve the development plan for the Batticaloa Municipal Council area having considered the recommendations made by the board of Management of the Urban Development Authority on 09.10.2013, by virtue of the powers vested in me under Section 8 F of the Urban Development Authority (amended) Act, No. 04 of 1982.

MAHINDA RAJAPAKSA,
Minister of Defence and
Urban Development .

Ministry of Defence and Urban Development,
No. 15/ 5, Baladaksha Mawatha,
Colombo 03.
19th May 2014.

07-207/2

APPROVAL OF THE DEVELOPMENT PLAN FOR BALANGODA URBAN COUNCIL

PUBLIC are hereby informed that the Development Plan prepared under Section 8A of the Urban Development Authority (Amendment) Act, No. 4 of 1982, for the Urban Development Area of Balangoda Urban Council has been approved on 19th May 2014, by Hon. Mahinda Rajapaksa, Minister of Defence and Urban Development by virtue of powers vested on him under Section 8 "F" of the said Amendment Act.

NIMAL PERERA,
Chaiman,
Urban Development Authority.

03rd June 2014.

Approval of the Development Plan for Urban Development Area of Balangoda

I, Mahinda Rajapaksa, Minister of Defence and Urban Development, do hereby approve the development plan for Balangoda Urban Development Area, having considered the recommendations made by the board of Management of Urban Development Authority on 09.10.2013, by the virtue of the powers vested with me under Section 8 F of the Urban Development Authority (amendet) Act, No. 4 of 1982.

MAHINDA RAJAPAKSA,
Minister of Defence and
Urban Development .

Ministry of Defence and Urban Development,
No. 15/ 5, Baladaksha Mawatha,
Colombo 03.
19th May 2014.

07-207/3

PRINTED AT THE DEPARTMENT OF GOVERNMENT PRINTING, SRI LANKA.

PREFACE

Batticaloa is a main city situated in the Eastern Province of Sri Lanka. This city is relatively different, Physically and Environmentally. This consists of Peninsula and Islands. Favourable the environment in the lagoon fishing industry has created a conducive situation especially for the expansion of prawn farming. Further, the lagoon environment attitude for the high bio-diversity.

The fundamental objective of the Batticaloa town development is to develop a modern town with minimum impact of natural disasters.

ACKNOWLEDGEMENT

It is our proud privilege to express the feelings of our gratitude to our resource persons who helped directly and indirectly to prepare the Batticaloa Development Plan 2030.

First and foremost we would like to thank the Commissioner of Batticaloa Municipal Council Mr. M. Udayakumar and his staff and Former Mayor of Batticaloa Municipal Council Sivageetha Prabagaran and Former Commissioner of Batticaloa Municipal Council Mr. K. Sivanathan for extending their fullest support to successfully complete the Batticaloa Development Plan 2030.

We would further want to express our special apperception and thanks to the UN-Habitat for their coordination, for providing necessary technical equipment and for their support in successfully conducting the stakeholder meetings regarding the development plan. At this moment we are extremely thankful to Plnr. Indu Weerasoori Project Manager of DRR and her team and Plnr. Jude Prassanna DRR Projects Office for their help at various stages of this Batticaloa Development Plan.

We also express our heartfelt and a deep sense of gratitude to the Former Directors Urban Development Authority Plnr. K.A.D. Chandradasa, Planr. W.J. Seneviratne, Plnr. H.A. Dayananda and Deputy Director, Plnr. E.M. Ekanayake for initiating the preparation of the Development Plan for Batticaloa.

We deeply indebted to the Asian Foundation for providing necessary technical equipment and for their support.

Last but not least we are very much thankful to Plnr. Sachithra Kularatne, Planning Division of Urban Development Authority and Plnr. Shalini Mariyathas, Lecturer, Department of Town and Country Planning, Faculty of Architecture, University of Moratuwa for their invaluable contribution and brilliant comments and suggestion to this Batticaloa Development Plan.

Finally we thanks all the people for their help directly and indirectly to complete the Batticaloa Development Plan 2030.

The Team participated in the Preparation of Town Development Plan of Batticaloa Municipal Council Area

1. Mr. Mahinda Withanaarachchi, Former Director (Development Planning)
2. Mr. L.D. Gamini, Deputy Director (Planning)
3. Ms. J.P.S. Somasekara, Head (Development Planning)
4. Ms. Thushithra Weerawagu, Planning Assistant
5. Mr. M. Nazaar, Planning Officer
6. Mr. D. Shathishkumar, Clerk and Computer Operator
7. Mr. U. Jabeer, Clerk
8. Mr. M. Fahmi, Clerk
9. Mr. S. Sithiravelautham, Office Aide
10. Mr. A. Siththi Hanoon, Office Aide
11. Mr. Burhadeen, Labour
12. Mr.S Navaneesan,Driver.
13. Ms. U.G.H. Rupasinghe, Computer Operator (Head Office).
14. Ms. K.Rajeswaran, Computer Operator (Head Office).

CONTENT

List of Tables

List of Images

List of Maps

List of Charts

List of Figures

CHAPTER 01: INTRODUCTION

1.1 Significance

The city of Batticaloa which is the capital of Batticaloa District, located in the East coast of Sri Lanka. With a population of approximately 86,000 and a land area of 75.9 sq km, the city of Batticaloa is a major commercial city in the Eastern Province, Sri Lanka. The city is built on a peninsula that consists of 12 km coastal strip and three islands that are formed by the lagoon. The city of Batticaloa is home to rich socio-cultural assets such as temples, mosques and historically significant churches. The city is also famous for its sea beaches, mangroves, scrub jungles, islands and lagoon system.

The Municipal Council Area of Batticaloa is bounded on the North by the Eravur Pattu Pradeshiya Saba, on the East by Bay of Bengal, on the South by Kattankudy Urban Council and on the West by Batticaloa Lagoon which separates the Manmunai West DS Division and Manmunai North DS Division. The Eastern side of the city is sandy and the Western side is sandy and gravel. The city is flat with the exception of Puliyantivu which is a little higher than the rest of the area. The city is between 1.20 M and 4.0 M above M.S.L. with scrub jungle and mangrove on the Northern side bordering the lagoon.

Image 1: Picturesque of Batticaloa Lagoon and the Town Center

1.2 Historical Evolution

1.2.1 The Origin of the Name of the City:

The city is known as “Mattakkalappu” in Tamil, “Madakalappuwa” in Sinhala and “Batticaloa” in English. There are number of reasons that are being said and written for how the city got its name. Pandit VC Kandaiya’s *Mattkalappu Thamilakam* (1960) says that “Mattakkalappu” refers the flat water city. He also adds that some other historians used to explain that the name refers the place where the river meets the sea.

There is another local explanation that says a kind of honey called Vamparai was received from the forests of Batticaloa and the ancient temples were built mixing this honey with sand. Therefore, the name Mattakkalappu also refers the land of great honey.

Despite the above historical records, Dr. Chandre Dharma-wardana's etymological researches say that the term "Mattakkalappu" is a classical case where Sinhala word is borrowed into Tamil. He quotes the Ceylon Gazette, 1834, which explains the etymology. In Sinhala, 'Malakalapuva' means 'muddy-lagoon'. This Sinhala word has been turned into "Mattakkalappu" in Tamil. Further, he explains that the English name 'Batticaloa' has been arisen from the Dutch usage 'Matecalou'. The maps that are drawn by ancient and colonial cartographers of Sri Lanka also point out the Batticaloa city in the map and the name is spelled as "Batticilow".

There may be many truths in the above explanations. However, the real evidences that could address how the name of the city originated are still not found.

1.2.2 The History of Human Settlements in Batticaloa

Pandit VC Kandaiya's *Mattkalappu Thamilakam* (1960) explains how the ancient immigrants found the Eastern Coast of Sri Lanka which was full of rich natural resources. Mutkuhar are known as the first people migrated to this land and constructed villages in various areas.

When Mutkuhar intruded through the salty water and reached the destination of their voyage at the forests situated around the lagoon, the name given by the Mukkuva was "Kallappu-Mattam" which literally means "boundary of lagoon". Later it was called "Matta-Kallappu" which indicates the destination of Mukkuva's voyage and the water is flat. Thus, the Mutkuhar is considered as the first people who established the livelihood in Batticaloa. When Mutkuhar arrived, there were fishery settlements along the lake shores in which Thimilar community lived.

The place where Thimilar lived is presently known as Thimilatheevu. The conflicts between Mutkuhar and Thimilar were frequent and both groups always fought to bring the areas under their control. The records say that it was Muslims who helped Thimilar and later established their settlements in Eravur and Kaththankudy areas.

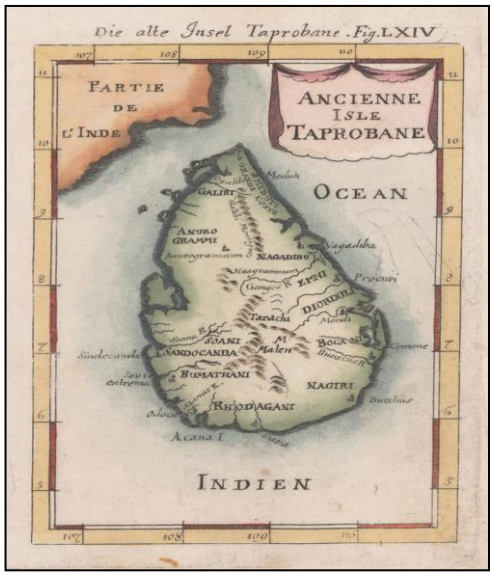


Image 2: Ancient Isle of Taprobane (Date is not found)

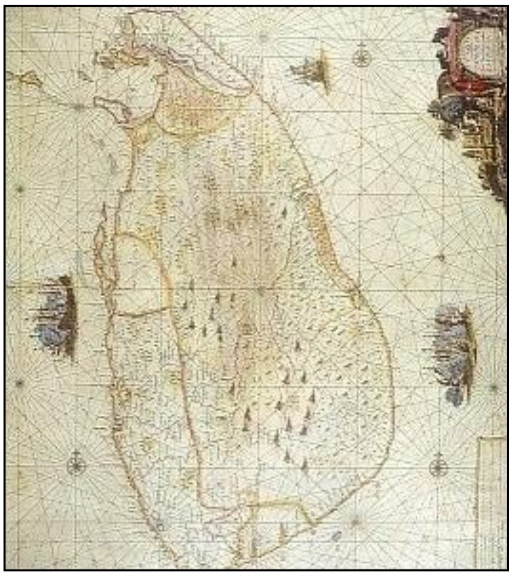


Image 3: Ancient Map of Sri Lanka (1500s)

Dennis B. McGilvrory (2008) writes the colonial attitudes in Batticaloa region in his book *"Crucible of Conflict: Tamil and Muslim Society on the East Coast of Sri Lanka".* He says that Batticaloa was eyed by many ancient rulers as it was an ideal location for ships to anchor. Portuguese (1505 - 1640 AD) found the harbor setting of Batticaloa and in 1628 they built a Fort using clay in the interior island. Later, a Dutch Admiral, named Spitzburgen sailed around the south coast of the island and made for Batticaloa. Batticalo Fort was the first to be captured by the Dutch (18 May 1638).

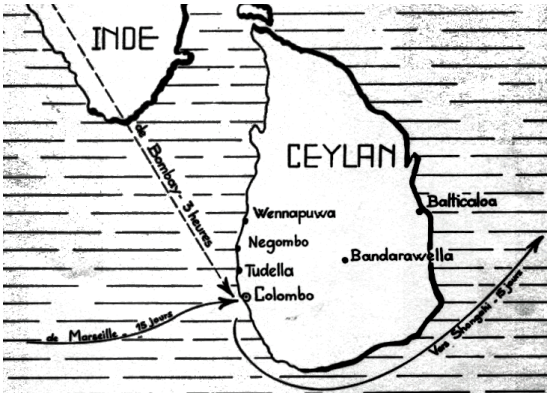


Image 4: Ancient Sri Lanka

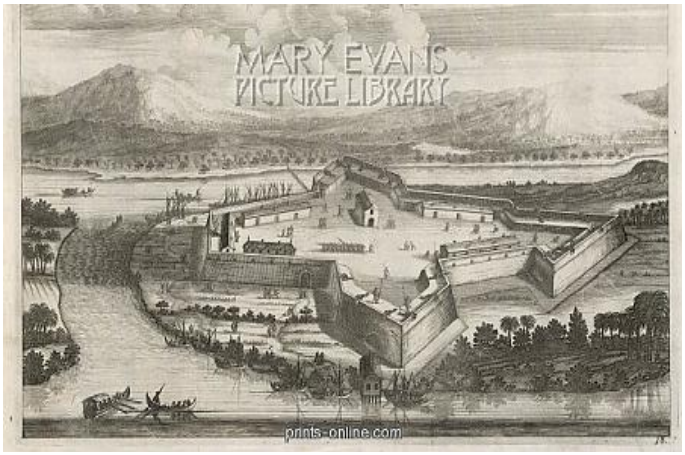


Image 5: The Fort built by Dutch

Image 6: The Fort Expansion by Portuguese

During the entire Portuguese, and much of the Dutch era, the writ of the Colonial Government seems not to have extended far beyond the Batticaloa Fort, as the Mukkuwar chiefs were bent on resisting colonial domination and taxation. Not until 1766, when the Dutch finally concluded a treaty with Kandy ceding rights over the entire coastal region and the Mukkuwar chiefs of the district pledged their loyalty to the Dutch by signing a deed , to effectively control much territory beyond the precincts of the Fort.

The British captured the East coast in 1796 and ruled till 1947. The famous "Lady Mannings Bridge" was built by the British crossing the Batticaloa Lagoon. The Governor was Hon. Mannings during the period of the construction of the bridge and thus, the bridge is named "Lady Mannings Bridge". Presently, it has adopted the local name "Kallady Bridge".

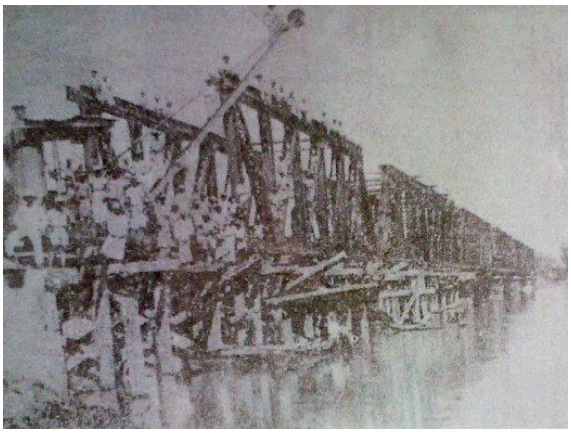


Image 7: Construction of Kallady Bridge in 1923

Image 8: The Kallady Bridge in 2012

Image 9: The New Addition of Kallady Bridge in 2013

1.2.3 The Spatial Evolution

The Evolution of Peninsula 1500s

The Evolution of Peninsula 1750s

The Evolution of Peninsula 1880s

The Batticaloa Peninsula 1990s

The Batticaloa Peninsula 2013

Image 10: The Evolution of Batticaloa Peninsula

The above series of images show the evolution of physical setting of the Eastern region. The natural expansion of lagoon territory in to the interior is highly visible in the maps. Also, the islands emerged and expanded throughout the period of time is remarkable in the growth of the city. Pulliyantheevu Island has been historically significant.

1.3 Physical and Environmental Setting

1.3.1 Geographical Situation

The city is built on a peninsula that consists of plain coastal strip and number of islands which are formed by the lagoon. Historically the setting of Batticaloa city, mainly its flat islands surrounded by the lagoon, is considered as an ideal location to establish settlements. This region has a distinct geographical identity in the minds of local people. They refer *Mattakkalappu* (Smooth Lagoon) which was later rendered as *Batticaloa* for colonial rulers.

1.3.2 Topography

The topography of the city is flat with the exception of Puliyantheevu which is little higher than the rest of the area. The city is between 1.20 M and 4.0 M above M.S.L. with scrub jungle and mangrove on the Northern side bordering the lagoon. The Eastern side of the city is sandy and the Western side is sandy and gravel.

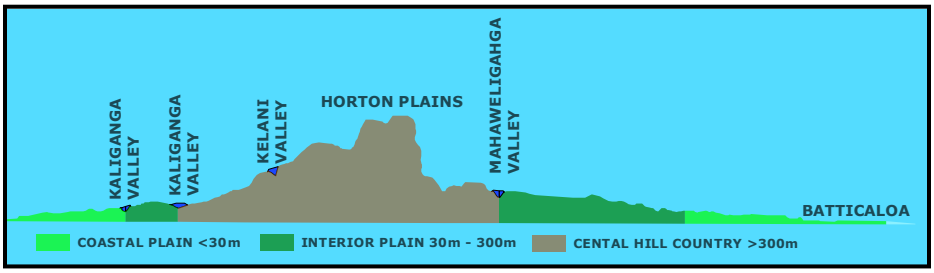
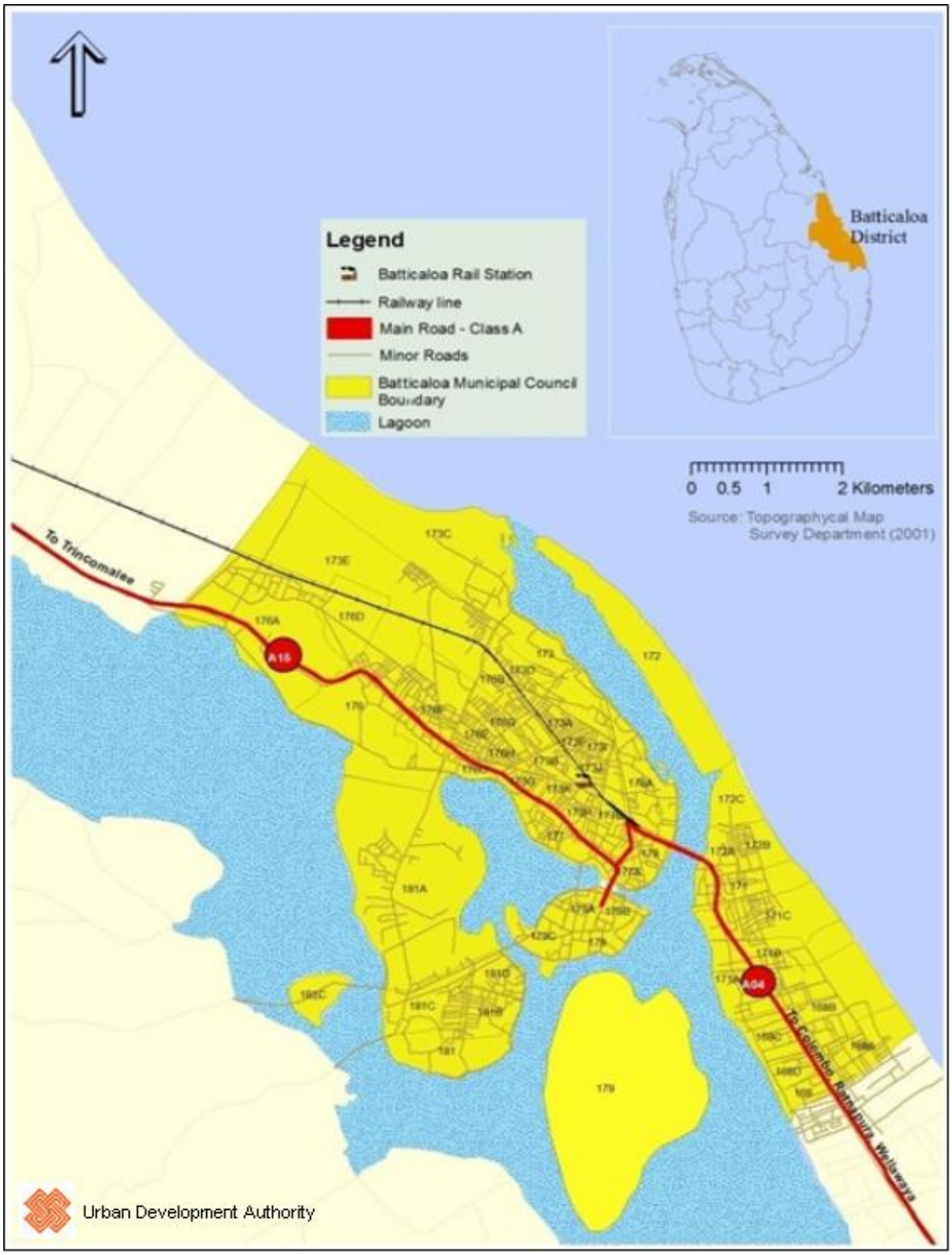


Figure 1: The Topographical Cross Section of Sri Lanka
Source: UDA, Batticaloa District Branch

1.3.3 Soil Condition

The soil type of East coast of the District is identified as sandy and the West as Clay Soil. The land which is bordering the Lagoon is Alluvial Soil. The soil type of Batticaloa Municipal Council area is mainly "Regosols' soil which is a weak mineral soil subjected to erosion. The Eastern side of the city is sandy and the Western side is sandy and gravel. Open dug shallow wells are commonly found in these areas.



Map 1: Batticaloa Peninsula, MC Area is Highlighted
Source: UDA Batticaloa District Office

Map 2: Soil Types of Batticaloa
Source: UDA, Batticaloa District Office

1.3.4 Temperature

The average monthly temperature of the city varies between 28^0C in January and December to 34^0C in May, June, July and August. Over the last forty years a maximum monthly temperature average on 36^0C was recorded in 2005 and a minimum monthly temperature average of 25^0C was recorded in 1976. Chart 01 illustrates the average annual temperature between 1970 - 2009. Analysis of 40 years of records of daily temperature data of Batticaloa has revealed a temperature increase of 0.4 – 0.5^0C during the last two decades in comparison to the previous two decades.

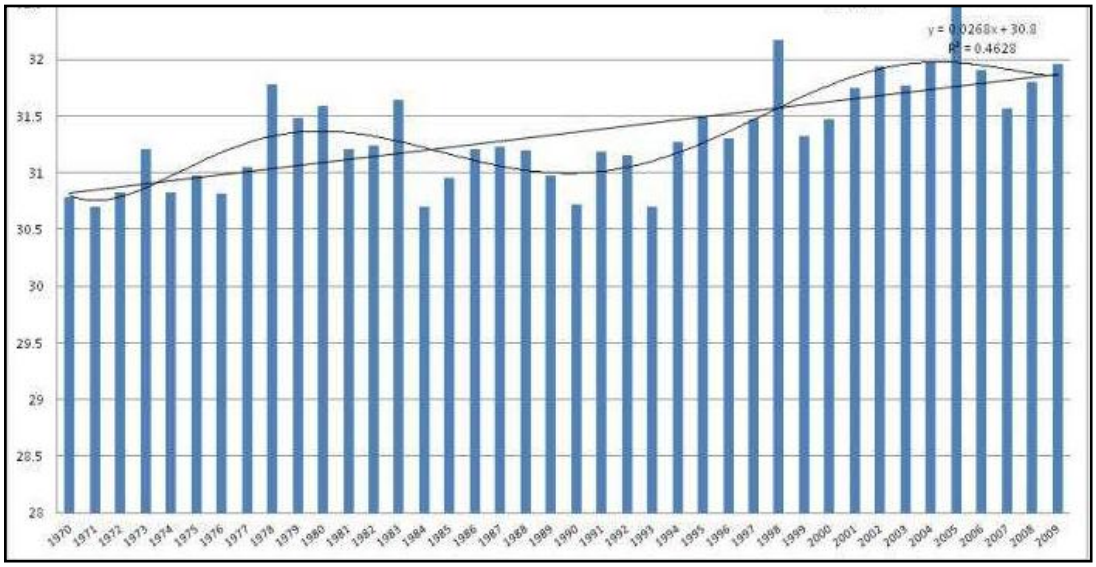


Chart 1: Average Annual Temperature 1970-2009
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

1.3.5 Rainfall

Batticaloa receives intensive rainfall during the North-East monsoon period of October to January and in the inter-monsoon period. The average annual rainfall of the city is 1,592mm. Over the past 40 years, annual rainfall has varied between a maximum of 3,081mm in 1994 and a minimum of 800mm in 1978. Chart 02 provides the annual average rainfall between 1970 -2009. The dry season occurs between the months of January to July where average monthly rainfall is less than 40mm. A graph showing the change in rainfall over a year is provided (Chart 03). In addition, rainfall analysis has revealed that there is an increase of average monthly rainfall during North-East monsoon, an expansion of the monsoon season and more irregularities in rainfall observed during the monsoon months. Further, there has been a decrease in rainfall during the non-monsoon months.

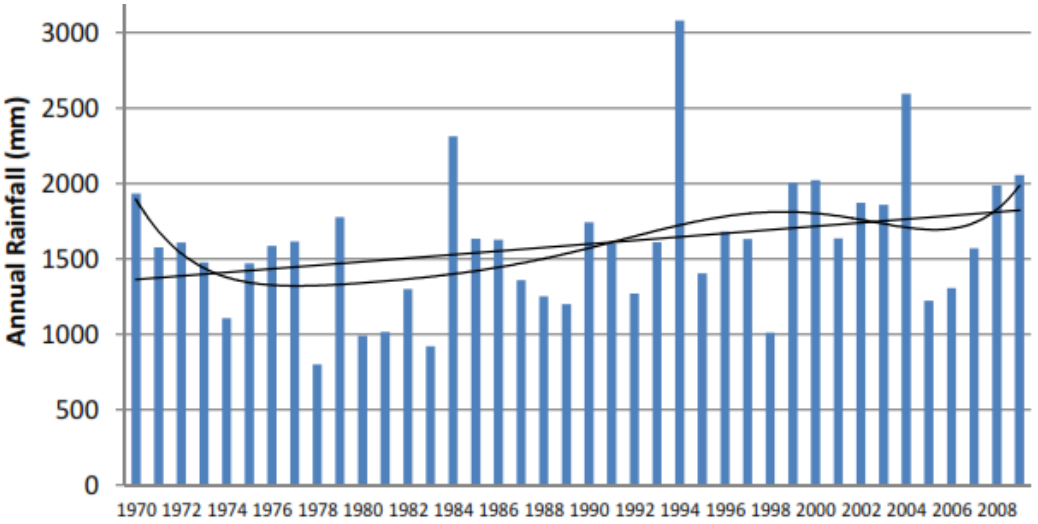


Chart 2: Average Annual Rainfall 1970-2009

Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

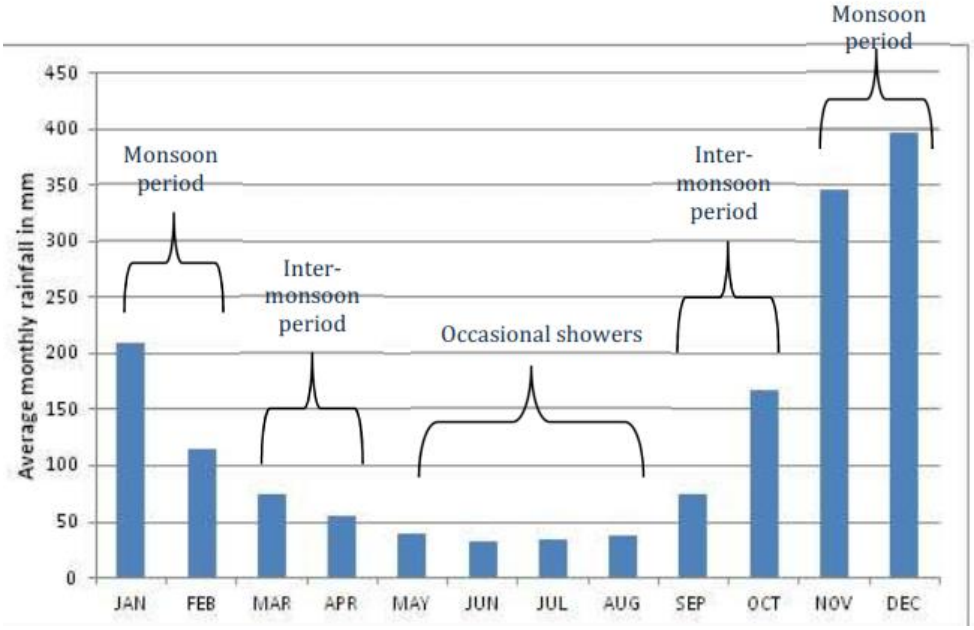


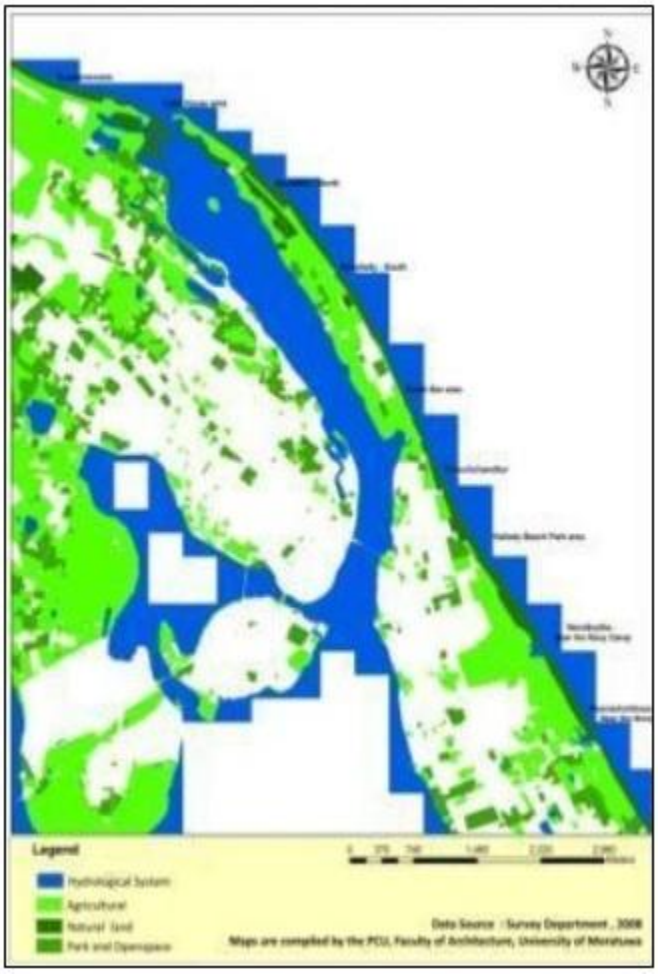
Chart 3: Average Monthly Rainfall

Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

1.3.6 Vegetation Pattern and Hydrological System

Map 03 shows the distribution of water systems and vegetation cover in the Batticaloa region. In addition to the sea, Batticaloa lagoon is considered as the major water body which extends 73.5 Km from Verugal (in the North) to Thuraineelavanai (in the South). Present green network in the BMC area is primarily comprised of Agricultural lands (paddy lands and irrigated crops, tree plantations and other perennial crops; farms), Parks and open spaces (Homesteads/ gardens; parks), Natural vegetation cover (Forests; low vegetation cover; Wetland and the marshy area).

Most of the natural vegetation cover is concentrated towards the coastal areas. Further, forest re-plantation project of Forest Department also has increased the forest cover in the coastal area.



Map 3: Vegetation Pattern and Hydrological System of Batticaloa MC Area
Source: Re-design of the Multipurpose GREEN BELT in the Coastal Belt of Batticaloa Municipal Council Area, NIVA, UNHABITAT, UOM, May 2012

In addition to the sea and lagoon, one of the important water features in the Batticaloa region is the small streamlets called “Thona”. These streamlets play a huge role in the rain-fed water retention in the region. They emerge in low-lying areas and mostly covered with scrubs. Despite the absence of evidences, the stories of the evolution of Batticaloa say that many parts of Batticaloa town which is built up areas today were covered with these “Thona” kind of streamlets. It is widely spoken among the residents of Batticaloa that the reason for today’s major floods is the filling of “Thona”.

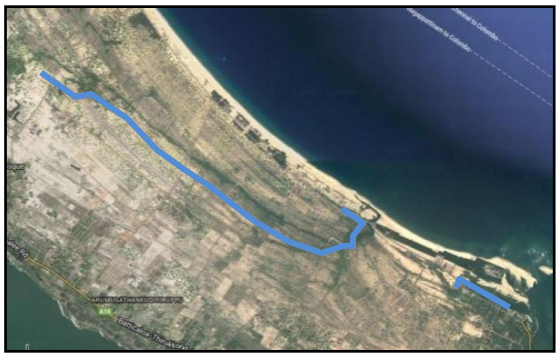


Figure 2: Thona in Thiraimadu Area

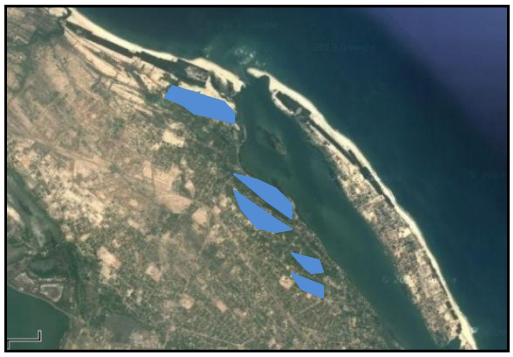


Figure 3: Thona in Palameenmadu Area

Figure 4: Thona in Nochchimunai Area

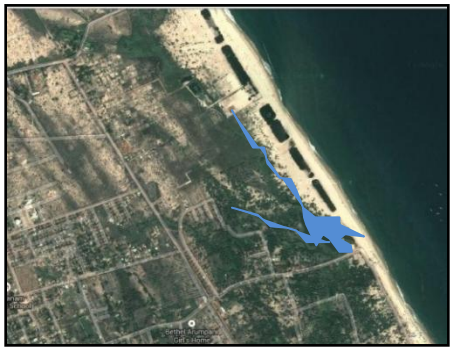


Figure 5: Thona in Nochchimunai Area

1.4 Cultural and Religious Heritages

The city of Batticaloa possesses many tangible and intangible cultural and religious heritage properties.

1.4.1 Cultural Heritages

1. Koothu Dance

Koothu is a traditional folk dance of Batticaloa. The dance is commonly accompanied by stories and songs. It is often found in church pageants and is not performed as part of folk theatre.

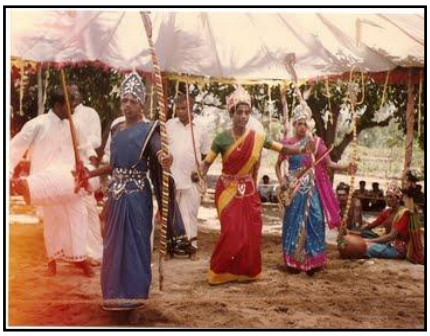


Image 11: Koothu Dance

2. Kapirigngna Music and Dance

The Burgher community celebrates a Baila Kapiringngna dance. Burghers are playing a significant role in Batticaloa in terms of the culture of the city. This particular dance is also coupled with songs and poems.

Image 12: Kapiringngna Dance

3. Anasheed Music

Anasheed is Islamic vocal music that is either sung a cappella or accompanied by percussion instruments such as the daff.

Image 13: Anasheed Music

1.4.2 Religious Heritages

1. Mamanga Pillayar Kovil

Mamangam is a Hindu temple and one of the oldest in Batticaloa and widely in Sri Lanka. The temple is said to be constructed at the place where Lord Rama had done prayers towards Lord Shiva, while in search of Seeta. The temple had the name of Mamanga Eashwara earlier, but has now come to be known as Mamanga(m) Pillayar.

Image 14: Mamanga Pillayar Kovil with the view of pond

2. Annaipanthi Sri Sitthivigneswara Kovil

This Kovil is located along the Hospital Road nearly 400 meters away from the heart of the town. It is believed to be the oldest kovil in this area and forms a cluster of Kovils for Pillaiyar, Iswaran, Kannaki Amman, Kandeshwaran, Navagraham (nine deities), Wairavar, Mooshiha and Paliwoodan. Kethara Gowry Viradam" for God Shiva held over twenty one days in October is an important festival of this temple.

Image 15: Annaipanthi Sri Sittivignewara Kovil

3. St. Mary's Cathedral

St. Mary's Cathedral in Puliyantivu and the Catholic Church at Thandavenveli were built by Rev. Joseph Vaz who came during the Portuguese era. Built in 1895, the church exhibits British architecture. The Priest Day which is held every August (15th to 24th) is an important annual festival of the church.

Image 16: St. Mary's Cathedral

4. Jami Ul Salam Grand Jumma Mosque

The mosque stands on a half acre of land facing Waber Stadium of Batticaloa. Believed to be founded by visiting Indian Muslims in 1924, it exhibits Islamic Architecture. It can be accessed along the Chapel Road about 250 m from Batticaloa town.

Image 17: Jami Ul Salam Grand Jumma Mosque

CHAPTER 02: NATIONAL AND REGIONAL CONTEXT

2.1 Policy Context

2.1.1 National Physical Policy and Plan 2030

The National Physical Planning Policy and Plan 2030 provide broad framework to secure Sri Lanka's place in the global economy by promoting economic growth. It is a strategically outlines a vision for Sri Lanka in 2030. Its role is to promote and regulate the integrated planning of economic, social, physical and environment aspects of land in Sri Lanka. Another important function of the National Physical Plan is to bring the Government, stakeholders and the community together to discuss, review and then make decisions to guide the future of Sri Lanka's economy, environment and communities.

The guiding principle of the National Physical Policy and Plan 2030 is economic, social and environmental sustainability. Sustainable development requires the effective integration of economic, social and environmental considerations in decision-making processes, and can be achieved through the implementation of the following principles:

- The precautionary principle
- Inter-generational equity
- Conservation of biological diversity and ecological integrity
- Improved valuation, pricing and incentive mechanisms

The principles of sustainable development provide a framework for addressing the issues and challenges that Sri Lanka will face in 2030.

1. Batticaloa to be a Metro City

One of the key national projects that the National Physical Policy and Plan 2030 propose is the Metro City Development Project. By 2030, Sri Lanka's Population is estimated to be 25 million. To accommodate such population it will be necessary to develop new Metro Cities and to restrict development in the Protected Area Network and the Central Fragile Area. Accordingly, in the Eastern Metro Region, Batticaloa and Ampara are selected to be the Metro Cities with 1 Million population. The National Physical Policy and Plan 2030 also mention that the Eastern Metro Region will also have tourism development and rice based food processing industries in 2030. Further, Matara-Batticaloa railway line (via Hambantota, Monaragala, Oluvil,

Trincomalee via Galoya) is also a major proposal. Also, there will be ten IT parks proposed in Sri Lanka. One of the cities that has been selected for IT Park development is Batticaloa.

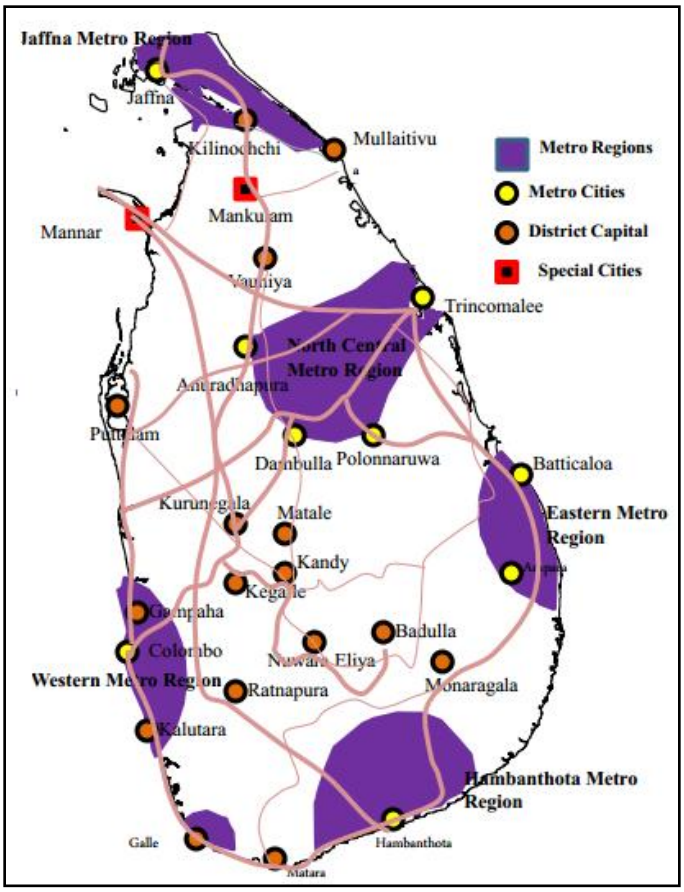


Figure 6: Proposed Metro Regions of Sri Lanka
Source: National Physical Structure Plan 2030

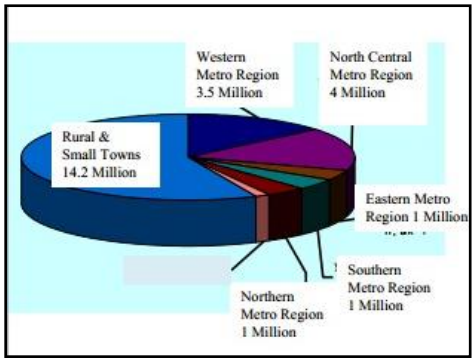


Chart 4: Proposed Population Distribution in Metro Regions
Source: National Physical Structure Plan 2030

2. Domestic Airport in Batticaloa

As per Figure 07 which demonstrates the overall development proposals for the entire country, Batticaloa city is proposed to be a Metro City with Domestic Airport. It is noted that the Vallayaravu Domestic Airport in Batticaloa which is presently closed down has lots of potentials to become a highly functional regional airport in terms of its connectivity and adequate space for expansion.

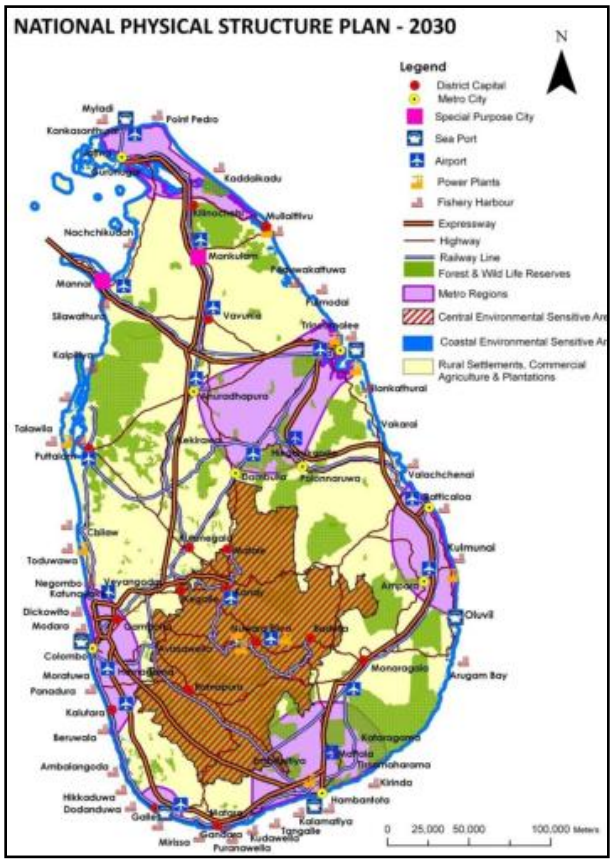


Figure 7: National Physical Structure Plan
Source: National Physical Structure Plan 2030

3. Fishery Harbour Development in Batticaloa

Figure 07 also points out a fishery harbor development in Batticaloa. The present fishery activities show a decreasing trend during the last 20 years. At this juncture, this particular fishery infrastructure development will contribute to create more job opportunities and income for the local people.

4. Proposed Railway Line via Batticaloa

Figure 08 shows the existing and proposed railway network of Sri Lanka. Presently Batticaloa city is well served with rail network which connects Batticaloa to main cities such as Colombo, Pollonnaruwa, Anuradhapura and many other cities. The proposed rail network will bridge the missing links connecting the city to Monaragala, Hambanthota, Ratnapura and many other cities of Southern and Central Provinces.

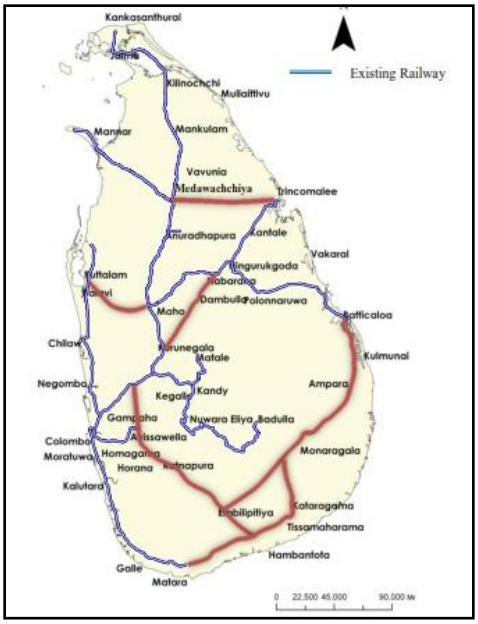


Figure 8: Proposed Railway Line
Source: National Physical Structure Plan 2030

5. Proposed Expressway via Batticaloa

Figure 09 shows the existing and proposed road network in Sri Lanka. Accordingly, Batticaloa which is a highly connected city will also be served with expressways. The proposed expressway will connect Batticaloa with Jaffna and Mannar in the North and Hambanthota, Matara and Galle in the South.

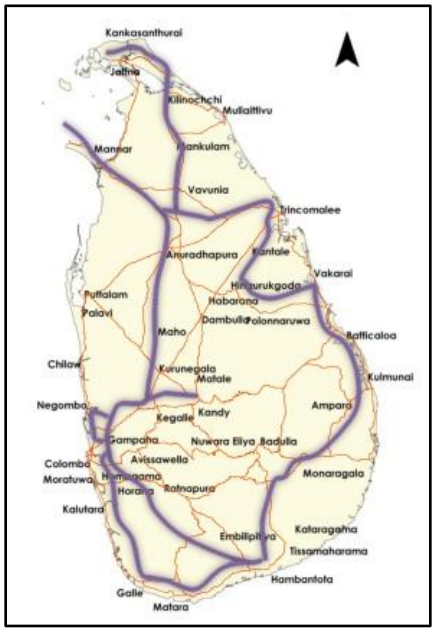


Figure 9: Proposed Expressways
Source: National Physical Structure Plan 2030

6. Proposed Tourism Development in Batticaloa

The city of Batticaloa already has many natural and cultural tourism assets. The National Physical Policy & Plan 2030 has identified the entire coastal zone of the island as Ocean Based Tourism Development Area. Batticaloa sea beaches are nationally well known for its beauty. Therefore, this plan proposed Batticaloa to be Beach Ocean based tourism development region.

Figure 10: Proposed Tourism Zones
Source: National Physical Structure Plan 2030

7. Proposed Industrial Zone in Batticaloa

The National Physical Policy & Plan 2030 identifies seven towns to establish Export Processing Zones. One of the prime cities that has been selected for this purpose is Batticaloa. Further, the plan has also mentioned that Batticaloa will be developed as an Industrial Township that caters national economic development.

Figure 11: Proposed Industrial Zones
Source: National Physical Structure Plan 2030

8. Disaster Management Policy for Batticaloa City

The National Physical Policy & Plan 2030 identifies the entire coastal towns as vulnerable regions for floods, tsunami, sea level rise, cyclone and storm. As a key policy, the plan suggests to direct the development of coastal towns to the inland areas in the country. Accordingly, the coastal communities of Batticaloa are proposed to expand inwards. Batticaloa had many dense settlements in the coastal area before tsunami. After 2004 Tusami devastation, many coastal communities got washed off. Presently Poonochchimunei, Kallady, Thiruchendur, Dutch Bar, are Navalady are some of the less dense coastal settlements.

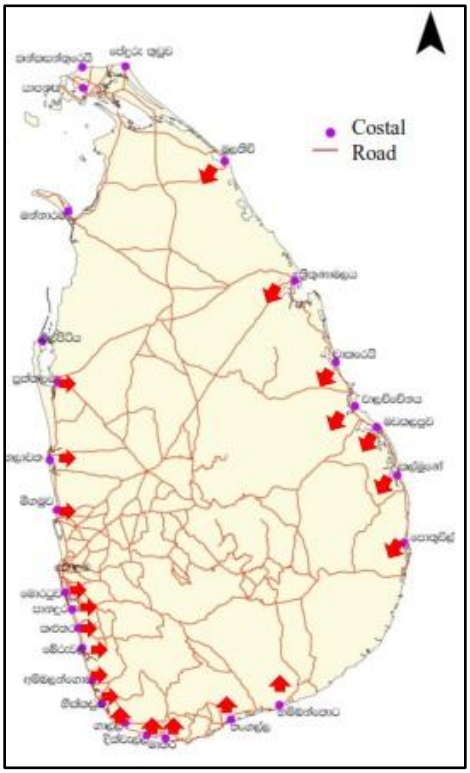


Figure 12: Disaster Management Policy
Source: National Physical Structure Plan 2030

2.1.2 Eastern Regional Physical Plan

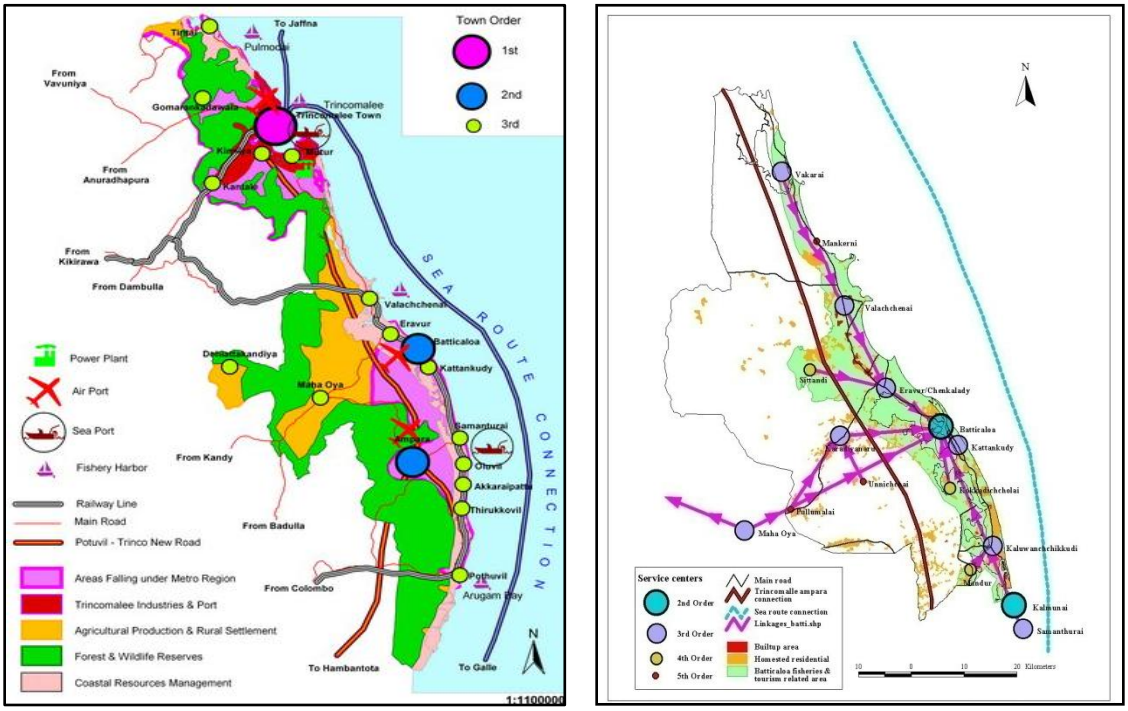


Figure 13: Eastern Province Regional Physical Plan 2030
Source: National Physical Planning Department

According to the Eastern Province Regional Physical Plan 2030 that is prepared by National Physical Planning Department, the Eastern Province will be a vibrant and well planned region which will harness its potentials and contribute to the local and national economy. As per the Eastern Regional Physical Plan, the network of settlements will be systematically developed addressing safety and quality of life. Further, development of agro based industries, development of industries using natural resources, and development of Trincomalee harbour are the key concerns of the Eastern Regional Physical Plan.

2.1.3 Local Administrative Context

Administrative Boundary of Batticaloa Municipal Council

North: *A* line drawn from a point on the coast 1.6 km (1 mile) south of Arumugathan Kudiyiruppu, Savukkadi road to a point on Batticaloa - Trincomalee road (A15) at 8.8 Km (5.6 mile) and thence west wards to the centre of Batticaloa lagoon.

West: From the last mentioned point south wards along Batticaloa lagoon up to the point where North boundary road of Kattankudy meets the lagoon.

South: From the last mentioned point East wards along North boundary road of Kattankudy up to New Kalmunai road hence East wards along mark of the Sea.

East*:* From the last mentioned point North wards along low water mark of the sea up to 1.6 Km South of Arumugathan Kudiyiruppu, Savukkadi road.

Batticaloa city was established as an urban council in 1933. It was upgraded to the status of Municipal Council in 1967 and the extent of the area of the local authority was extended from 10.17 sq km to 75.9 sq km of which 10.83 sq km is lagoon and small ponds. The Municipal Council area was declared as urban development area under Urban Development Authority by Gazette Notification Extraordinary of No.24/3 – Tues Day, February20, 1979. Batticaloa the capital city of the Batticaloa District provides services to the locality and to the people of other areas like Kaththankudy, Valachchenai, Oddamavady, Eravur, and Chenkalady. Major administrative services in Batticaloa District are provided by District Secretariat and other Government Institutions which are located in the heart of the Batticaloa town and enhance the role of the Batticaloa Town in service provision.

Figure 14: District Secretariat Divisions of Batticaloa District
Source: UDA, Batticaloa District Branch

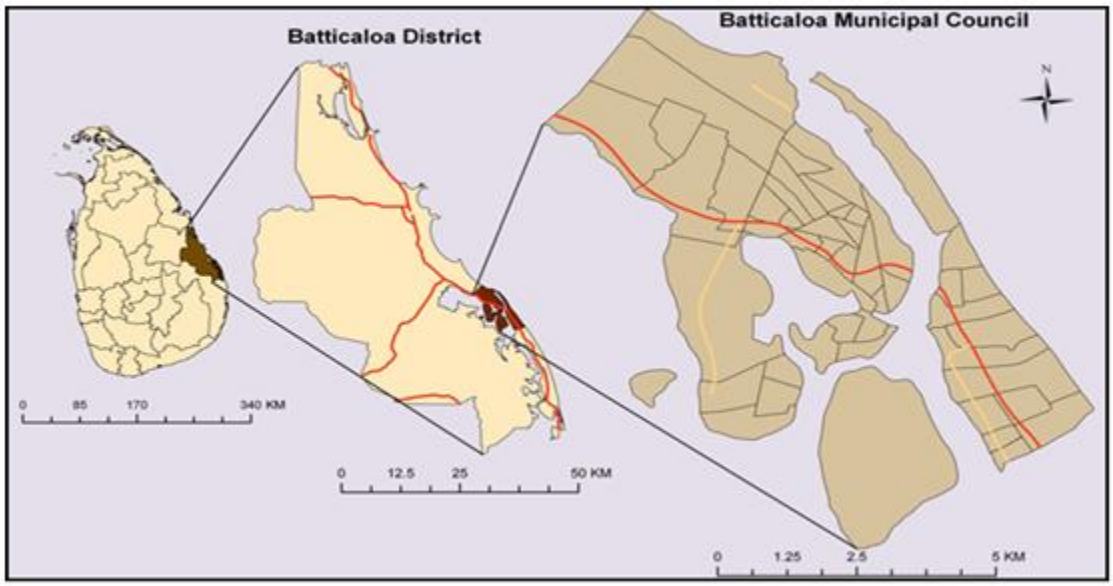


Figure 15: Location of Batticaloa Municipal Council
Source: UDA, Batticaloa District Branch

Batticaloa town area has been administrated by Manmunai North Divisional Secretariat. Batticaloa Municipal Council manages the urban development of the city. Divisional Secretary coordinates the affairs of the people through the Grama Niladaries. There are 48 Grama Niladari Divisions under the Manmunai North DS Division as the following table shows.

	GN Division	Number of Villages		GN Division	Number of Villages
01	Puthunagar	3	26	Thissaverasingam (Squre)	1
02	Arasady	1	27	Koolavady (East)	1
03	Veechukalmunai	1	28	Parathipuram	1
04	Thiruchenthoor	4	29	Gnanasooriyam Square	1
05	Sethukudah	1	30	Koolavady	1
06	Thirupperunthurai	1	31	Thiraimadu	3
07	Thimilathivu	2	32	Punnaicholai	4
08	Puliyanthivu (South)	2	33	Palameenmadu	1
09	Puliyanthivu (Central)	1	34	Iruthayapuram (East)	3
10	Puliyanthivu (East)	2	35	Mamangam	1
11	Puliyanthivu (West)	1	36	Amirthakali	4
12	PeriyaUppodai	3	37	Dutch Bar	1
13	Koddaimunai	1	38	KalladyMugathuwaram	1
14	Thamaraikerny	1	39	Navalady	2
15	Thandavanvvely	2	40	Kallady	1
16	Iruthayapuram (Central)	1	41	KalladyVeloor	1
17	Jayanthipuram	1	42	KalladyUppodai	4
18	SinnaUrany	3	43	Nochchimunai	2
19	Iruthayapuram (West)	1	44	Navatkudah (South)	1
20	Panichaiyady	3	45	Navatkudah (East)	2
21	PeriyaUrany	1	46	Navatkudah	1
22	Karuveppankerny	3	47	Manchanthoduwai North	1
23	Sathurukondan	2	48	Manchanthodu(South)	2
24	Kokkuvil	3			
25	Veddukkadu	2			

Table 1: G.N Divisions and Number of Villages in Batticaloa Municipality
Source: UDA, Batticaloa District Branch

2.2 Urban Hierarchy

The Eastern Province Regional Physical Structure Plan identifies the hierarchy of urban centers in the Eastern Province. The factors that are considered for the identification of urban hierarchy are Compulsory functions (Eg: Admin, Judicial service, Security/ Police Stations) and Semi- compulsory functions (Eg: Trade, financial institutions, Market). Accordingly, Batticaloa MC Area functions as 2nd order service centre in Eastern Province. Batticaloa town provides large number of services such as commercial, health, education, financial, administrative & cultural etc. It serves not only to the citizens of Batticaloa MC but also commuters from many parts of the district.

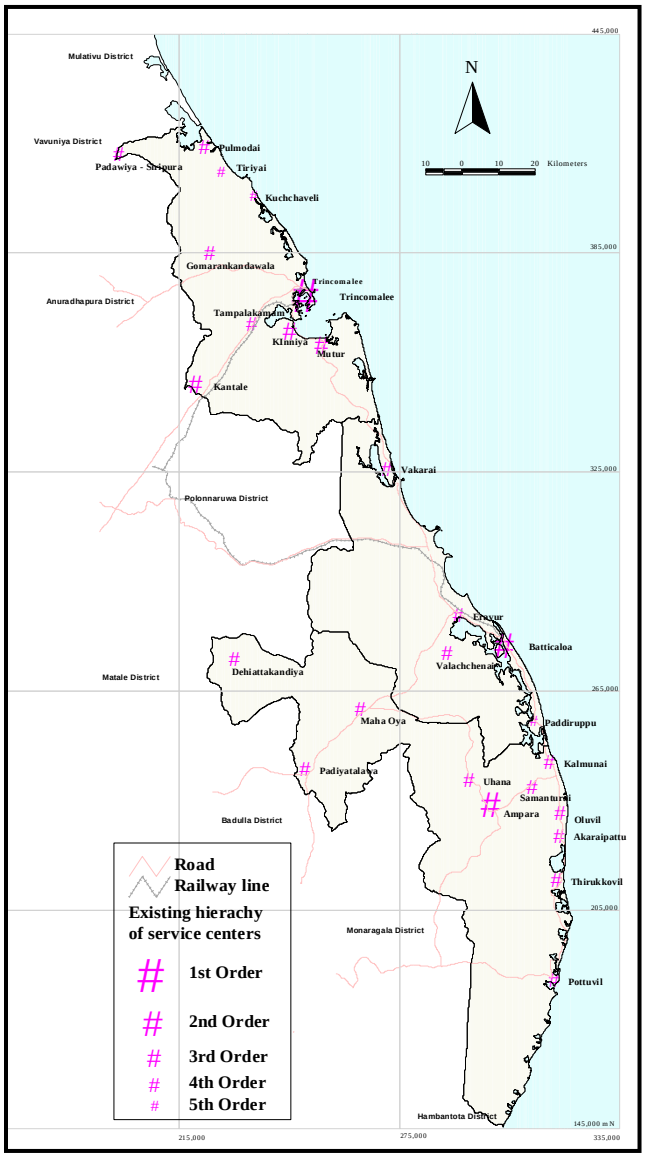


Figure 16: Hierarchy of Service Centers of Eastern Province
Source: EML Consultants, 2004

2.3 Special Connectivity

Batticaloa is a well connected city. There are four highways that connect Batticaloa to Trincomalee, Habarana, Kandy, Badulla and Arugam Bay. This connectivity makes the city significant and service provider to many surrounding towns. The proposed connections make the city even more important.

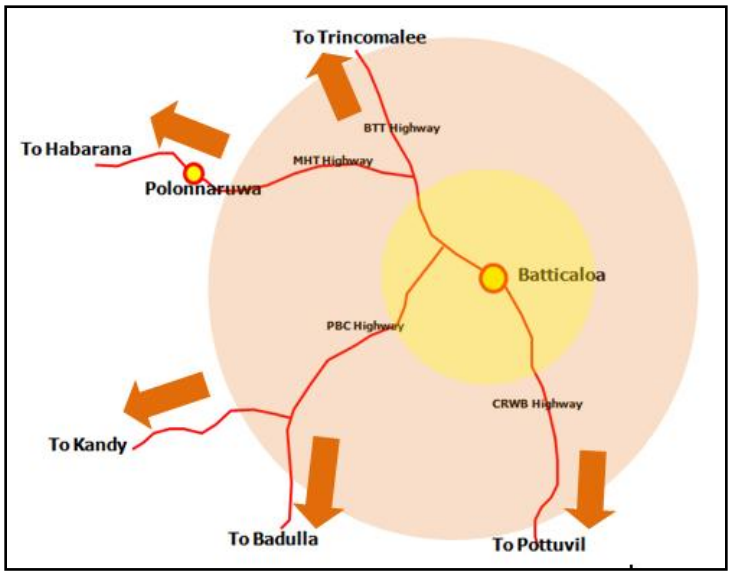


Figure 17: The Existing and Proposed Connectivity of Batticaloa
Source: UDA, Batticaloa District Branch

The proposed connections include expressway and railway line. The proposed rail network will bridge the missing links connecting the city to Monaragala, Hambanthota, Ratnapura and many other cities of Southern and Central Provinces. Further, Batticaloa which is a highly connected city will also be served with expressways. The proposed expressway will connect Batticaloa with Jaffna and Mannar in the North and Hambanthota, Matara and Galle in the South. Since the National Physical Policy and Plan 2030 propose Batticaloa to be a tourist destination and Industrial Township, these targets will be well achieved through these proposed new connection modes.

2.4 Systems and Flow

Figure 18 shows the hydrological system, vegetation pattern, settlement pattern, road network and other natural systems. Batticaloa city has vast amount of forest lands and paddy lands. The settlement areas are located on the coastal belt. As mentioned in the Historic Evolution chapter the city has evolved with fishing hamlets on the lagoon shores. When migrants arrived at the Eastern Coast from India there were fishing villages on the banks of the island. This nature continued throughout a long period of time and the present day settlements are largely distributed along the coastal belt and islands.

Figure 18: Hydro System and Vegetation Pattern of Batticaloa
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

CHAPTER 03: POPULATION AND DEMOGRAPHY

3.1 Existing Population and Population Growth Rate

Total population of Batticaloa District was 598,265 in year 2010. The population within the Batticaloa Municipal Council area was 94,609. It constitutes 16% of the total District population. However, the total population of the BMC area has shown a steady increasing trend during the last few decades. The population of Batticaloa Municipal Council area was 36,696 in 1971 which increased to 78,509 and 94,609 in 2001 and 2010 respectively. The population growth rate which was 1.57% during the period 1971-1981, increased to 2.07 % during the period 2001 - 2010. Table 02 below indicates the population growth, growth rate of the population in Batticaloa Municipal Council area from year 1971 to 2010.

Year	Total Population	Growth Rate
1971	36,696	-
1981	42,934	1.57%
1990	51,037	1.92%
2001	78,509	3.92%
2010	94,609	2.07%

Table 2: Population Growth Rate 1971 – 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa (1990 – 2010) & UDA Batticaloa

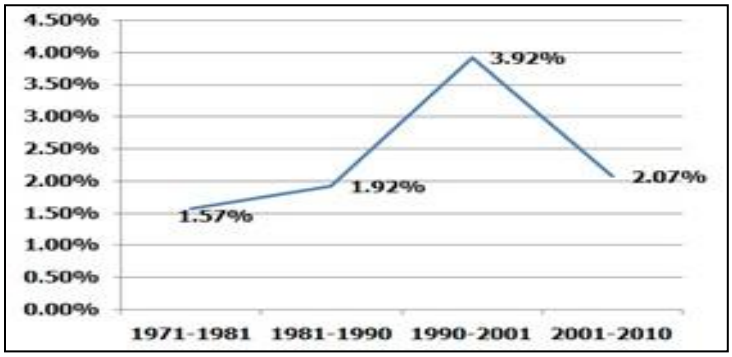


Chart 5: Variation in Population Growth Rate 1981- 2010
Source: UDA, Batticaloa District Branch

3.2 Population Density

Batticaloa Municipal Council area is having the second highest population density in Batticaloa district which is 2,239 persons per sq km in year 2010. Based on GN Divisions in the Municipality Arasady GN Division (14,077 per sq km) has the highest

population density. Koolavady (14,000 per sq km) and Iruthayapuram (10,314 per sq km) GN Divisions are having the 2nd and 3rd highest population density in Batticaloa MC area. The lowest population density has been recorded in Navalady (206 per sq km) in year 2010. Puliyanthivu West (220 sq km), Thirupperunthirai (403 per sq km) and Palameenmadu (460 per sq km) are the other GN Divisions which have low level of population density.

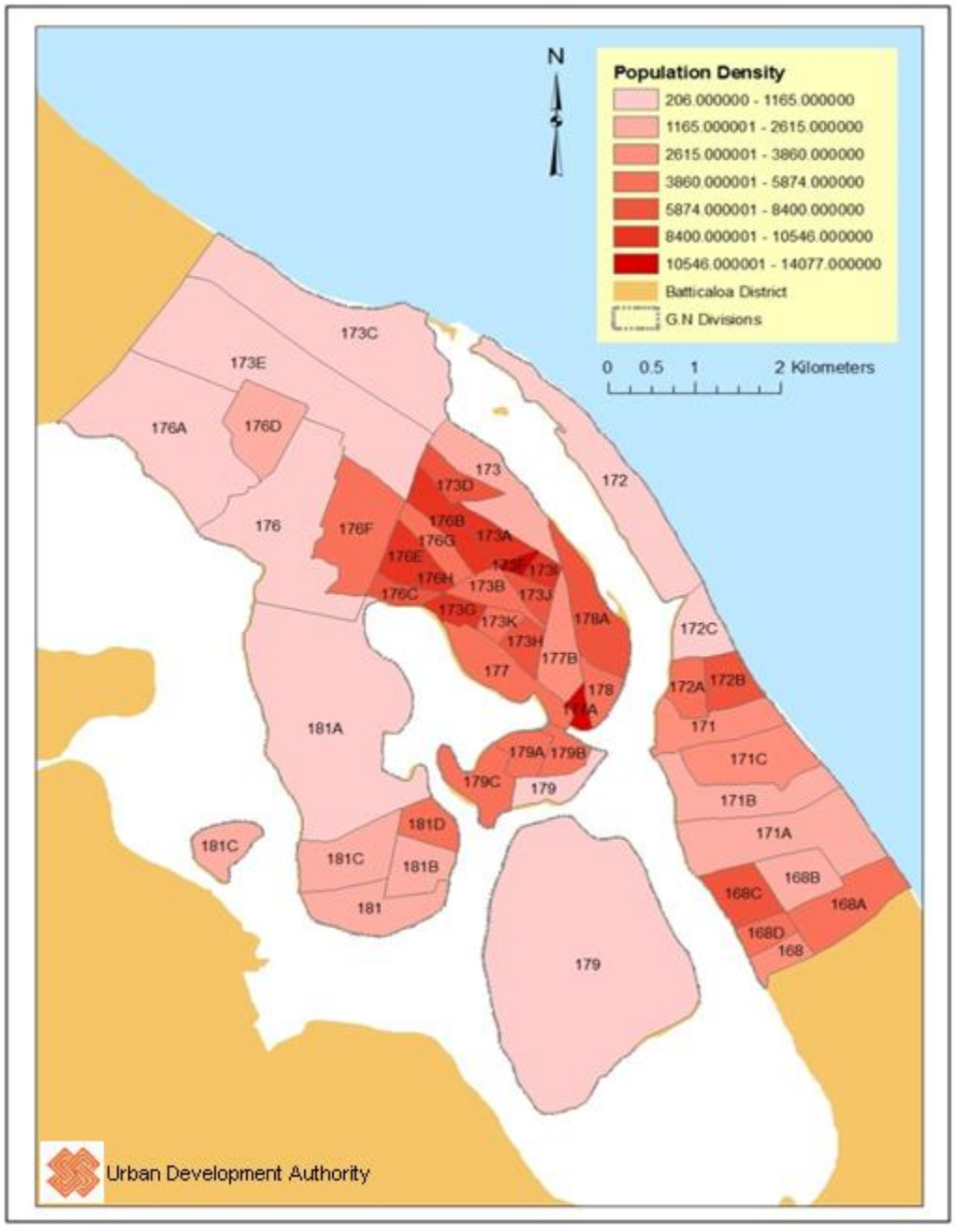


Figure 19: Population Density by GN Division – Year 2010
Source: UDA, Batticaloa District Office

3.3 Commuting Population

According to the survey done by the Urban Development Authority in 2010, approximately 75,000 to 100,000 people commute to Batticaloa MC area from 6 am to 8 pm daily. The commuting occurs in order to obtain services from various institutions such as Teaching Hospital, Private Hospital Faculty Of Health Care Sciences Of Eastern University, Open University, Technical College, District Court, District Secretariat, railway station, airport, financial institutions and other district and provincial government institutions which are located in Batticaloa MC area.

3.4 Age Structure

According to the population age structure records, 33% of the population proportion is falling within 15-29 age category. This denotes that the emerging need for housing and employment. Further, there is a high proportion of population within 15-49 age category.

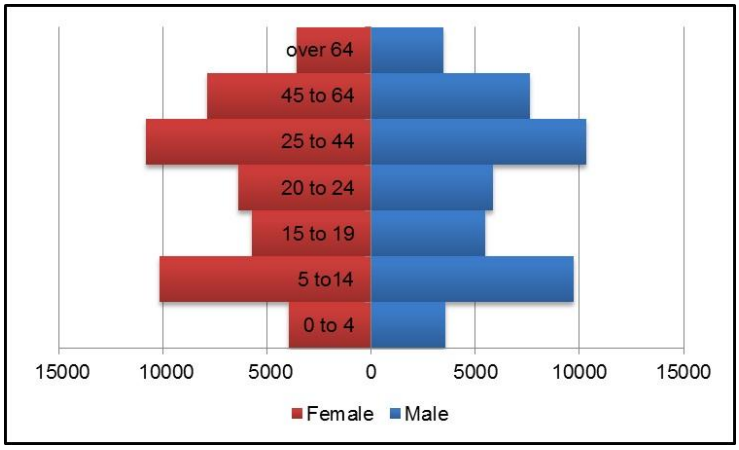


Chart 6: Age Pyramid of Batticaloa MC Area - Year 2010
Source: UDA, Batticaloa District Branch

This trend shows the availability of active labor force within the city. Further, the Chart No. 6 shows that the aging population (over 64 years) is also a significant proportion in the city population which requires a special health and subsidies consideration.

.

3.5 Population Composition by Sex, Ethnicity and Religion

3.5.1 Population Composition by Sex

According to the census data for the year 2010, the population in Batticaloa MC Area constituted of 49% males and 51% females as shown in Chart 7. The male female ratio is morally same.

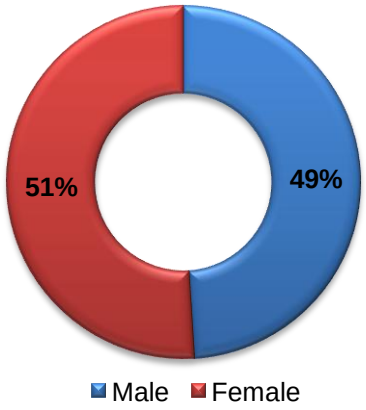


Chart 7: Population Composition by Sex
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

3.5.2 Population Composition by Ethnicity

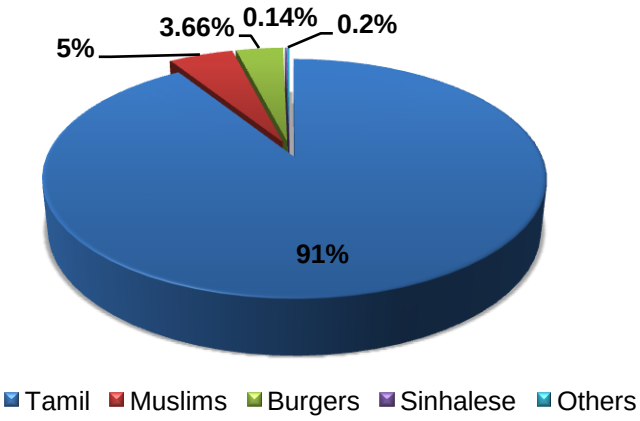


Chart 8: Population Composition by Ethnicity 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

According to the census data for the year 2010, the ethnic composition of the population of Batticaloa MC area can be categorized as 85,790 Tamils (91%), 4,955 Muslims (5%), 3,537 Burgers (3.66%), 133 Sinhalese (0.14%) and 0.20% belongs to other ethnic groups.

3.5.3 Population Composition by Religion

According to the census data for the year 2010, the religious composition of the population in Batticaloa MC area can be categorized as Hindus as majority which consist 70% of total population and next prominent group is Roman Catholic which accounts 16.5% of the total population. The rest of the religious groups such as Islam, Christians and Buddhist are minority religious group in Batticaloa MC Area.

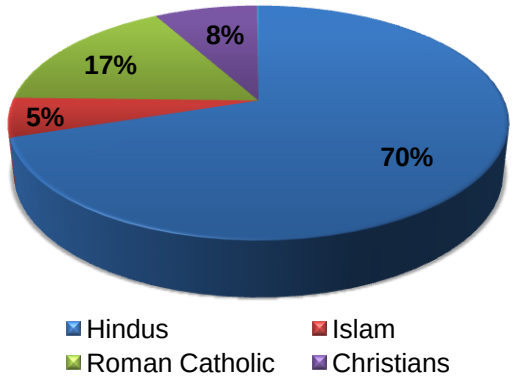


Chart 9: Population Composition by Religion 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

3.6 Proposed Population with Hypothesis

The present population growth rate of the BMC area is 2.27% and this particular Development Plan projects the population growth rate to be about 2.5 to 3.0%.

The projected growth rate and the predicted population for the period from year 2015 to 2030 in the Batticaloa MC Area are given in following table 03.

	Growth Rate	Predicted Population			
		Yr 2015	Yr 2020	Yr 2025	Yr 2030
Min. Growth rate	**1.5%**	**101,894**	**109,740**	**118,190**	**127,291**
Medium Growth rate	**2.5%**	**107,002**	**121,019**	**136,872**	**154,802**
Max. Growth rate	**3.0%**	**109,652**	**127,087**	**147,294**	**170,714**

Table 3: Population Predictions 2015 – 2030
Source: UDA, District office, Batticaloa

According to Arithmetic Growth Rate model, population growth rate was calculated as 2.5% for the Batticaloa Municipality area. In 2030 Batticaloa city will be more urbanized as the new development initiatives such as improvement of infrastructure facilities and provision of services. With this development trend it is assumed that the population growth rate for the area will be 2.5%. Hence the population in year 2030 will be 154,802. In order to cater welfare of these projected population services & infrastructure should be planned in 2030.

3.7 Aging Population

The age group of over 60 is considered as Aged Dependency. 30% of the total population can be identified as depended population which includes child dependency and aging dependency.

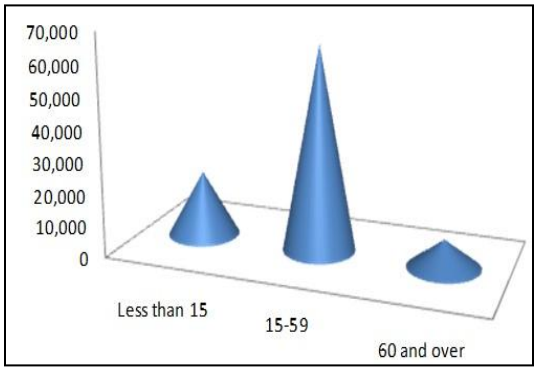


Chart 10: Labour Force and Aging Population 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

3.8 Employment

3.8.1 Labor Force and Dependent Population

Population within the age group of 15-59 is defined as the labor force while age group of 0-14 is defined as Child Dependency and age group of over 60 is defined as Aged Dependency. 31% of the total population is identified as depended population, while 69% of the total population falls within the category of labor force.

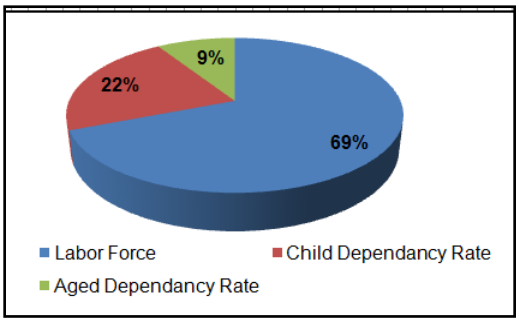


Chart 11: Labor Force & Dependent Population
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

3.8.2 Education Level and Unemployment

Out of 12,404 educated unemployed population, 48% unemployed population has attained education below GCE O/L while 30% has attained education up to O/L. Further, 14% of unemployed population has completed GCE A/L.

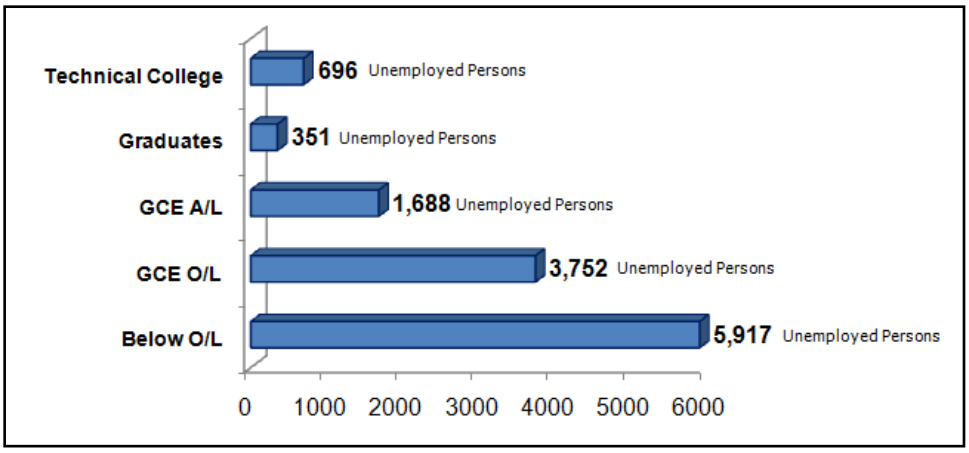


Chart 12: Education Level and Unemployment
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

3.9 Issues and Problems

1. According to the employment records, the unemployment rate in the BMC area is 30%. This is comparatively high and the solutions need to be brought in the Development Plan.
2. The unemployed proportion of the total population shows that most of them are educated (up to O/L).
3. No employment opportunity for unemployed population.
4. Depended population is 31%.

CHAPTER 04: LAND USE

4.1 Dominant and Salient Features

4.1.1 Developable, Undevelopable and Vacant Land Areas of Batticaloa

Being a peninsula and surrounded by lagoon and sea, Batticaloa has many forms of highly sensitive areas which are not suitable for development. Therefore, the developable land areas of Batticaloa MC Area are already in optimum use.

Mainly the Pulliyanthivu Island which is presently the town center of Batticaloa is fully filled with residential and commercial uses. The land areas in the coastal part of Batticaloa are moderately filled with settlements particularly after the tsunami devastation.

According to the Nolli map in Map 4, the Black patches show the present built up areas and the white patches show the sensitive areas, undevelopable areas and vacant lands. It is obvious that the highly built up areas are located interior and the development occurs in a linear pattern along the coast.

4.1.2 The Arrangement of Land Uses

A conceptual diagram that shows the arrangement of land uses is given in Figure 20. This conceptual diagram denotes how the dominant spatial features have created what the city is today. In the diagram, the blue lines show sea and lagoon stretches, green lines show agricultural and forest lands and orange line shows the settlement areas.

This explains the ribbons of various land uses parallel to each other. The notable feature is that the settlements are located in between blue and green which gives the natural beauty, identity and safety to the city. This natural pattern of the city must be maintained throughout any development stage in the future in order to ensure the safety of the community and natural resources.

Map 4: Nolli Map of the Batticaloa MC Area
Complied by the Project Team

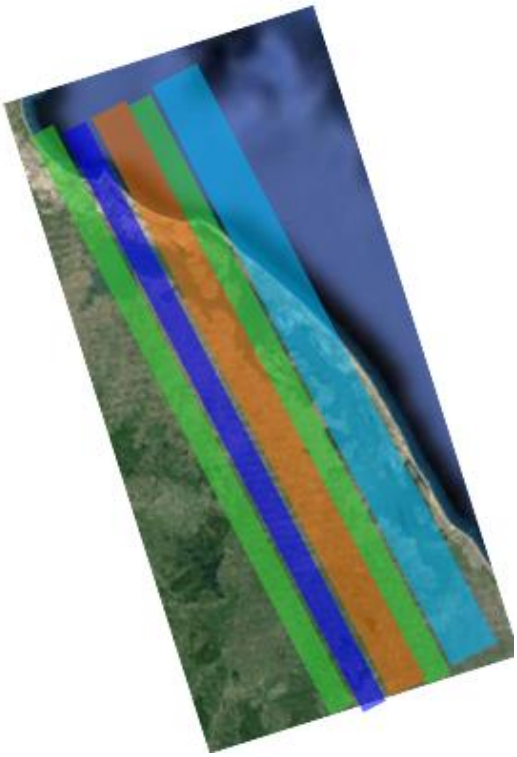
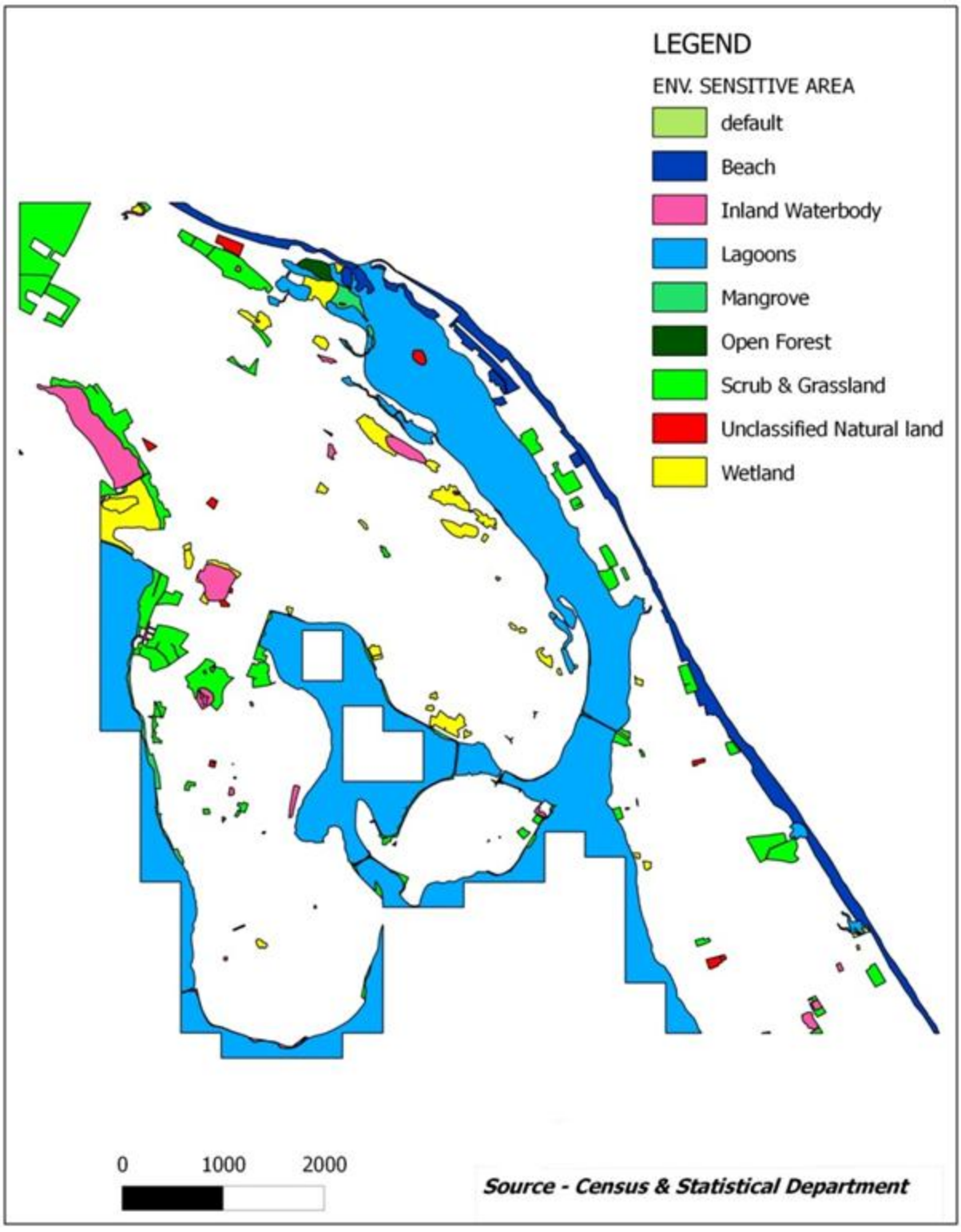


Figure 20: Conceptual Diagram of the Arrangement of Land Uses

4.1.3 Environmentally Sensitive Areas

Due to the location and natural setting of Batticaloa, the environmentally sensitive areas act as a dominant land use feature. The sensitive areas are prevailing in Batticaloa in different forms such as inland water features (ponds, Thona, and lagoon), mangrove, scrub forest, grass land, wetlands, etc. The below map shows the environmentally sensitive areas in Batticaloa MC Area.



Map 5: Environmentally Sensitive Areas in Batticaloa MC Area
Source: Technical Document on GIS RRS and KMC, Climate resilient action plans for Coastal urban areas in Sri Lanka (CCSL), NIVA, UOM, UN Habitat, 2012.

4.1.4 Dominant Land Use Pattern of Batticaloa

The land use pattern of Batticaloa MC Area is very unique and diverse. Residential land use is the most dominant use. Agricultural uses and vegetation covers are secondary dominant land uses.

In terms of residential activities, areas such as Pulliyantheevu Island, from Koddamunai to Thiraimadu and from Dutch Bar to Manjanthoduvai are the dense residential areas. The tsunami resettlements are located in Thiraimadu area which is an emerging residential area. The commercial activities are mainly concentrated in Pulliyantheevu Island.

The following Chart 13 shows the extent of each land use in Batticaloa MC Area. Accordingly, residential uses (1170 Ha) are the most prominent land use and agricultural lands are the second prominent land use. It is important to note that significant proportion of public land (282 Ha) is also available in the MC Area which will be a major strength for future development activities. In terms of commercial uses, the proportion is very low compare to other major land uses. This shows that the compact town center serves large part of community. As mentioned earlier, the existence of large proportion of natural lands including wetlands, water bodies, and scrub forests is also apparent in the above diagram. (Total land area 4311.87 Ha)

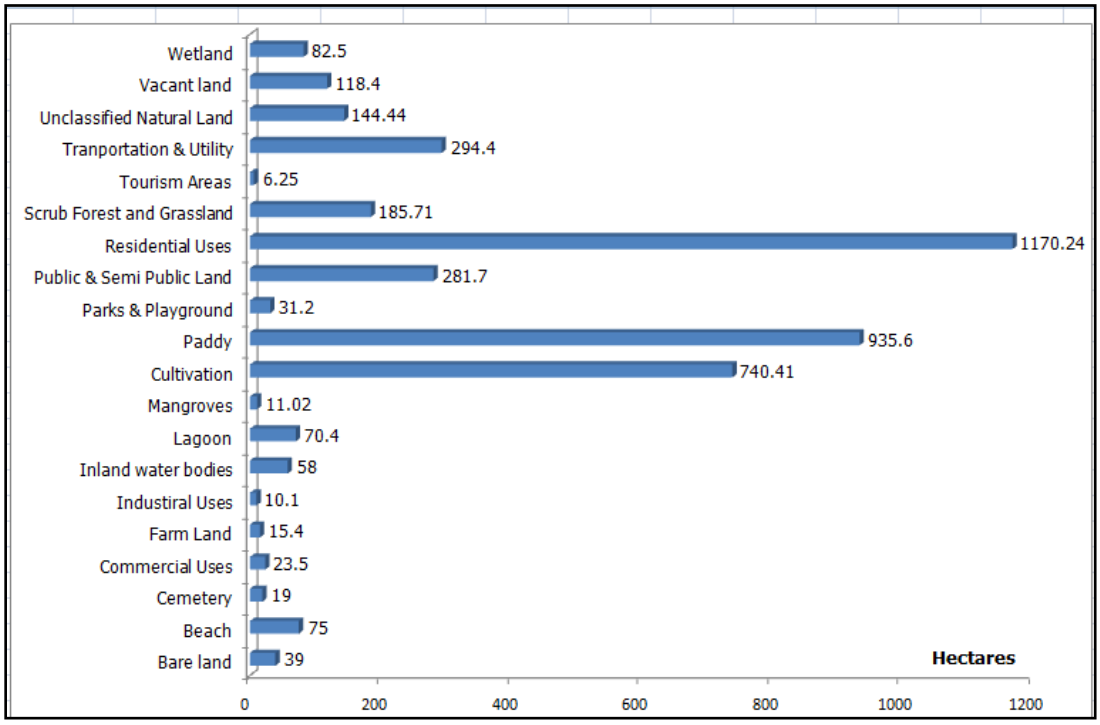
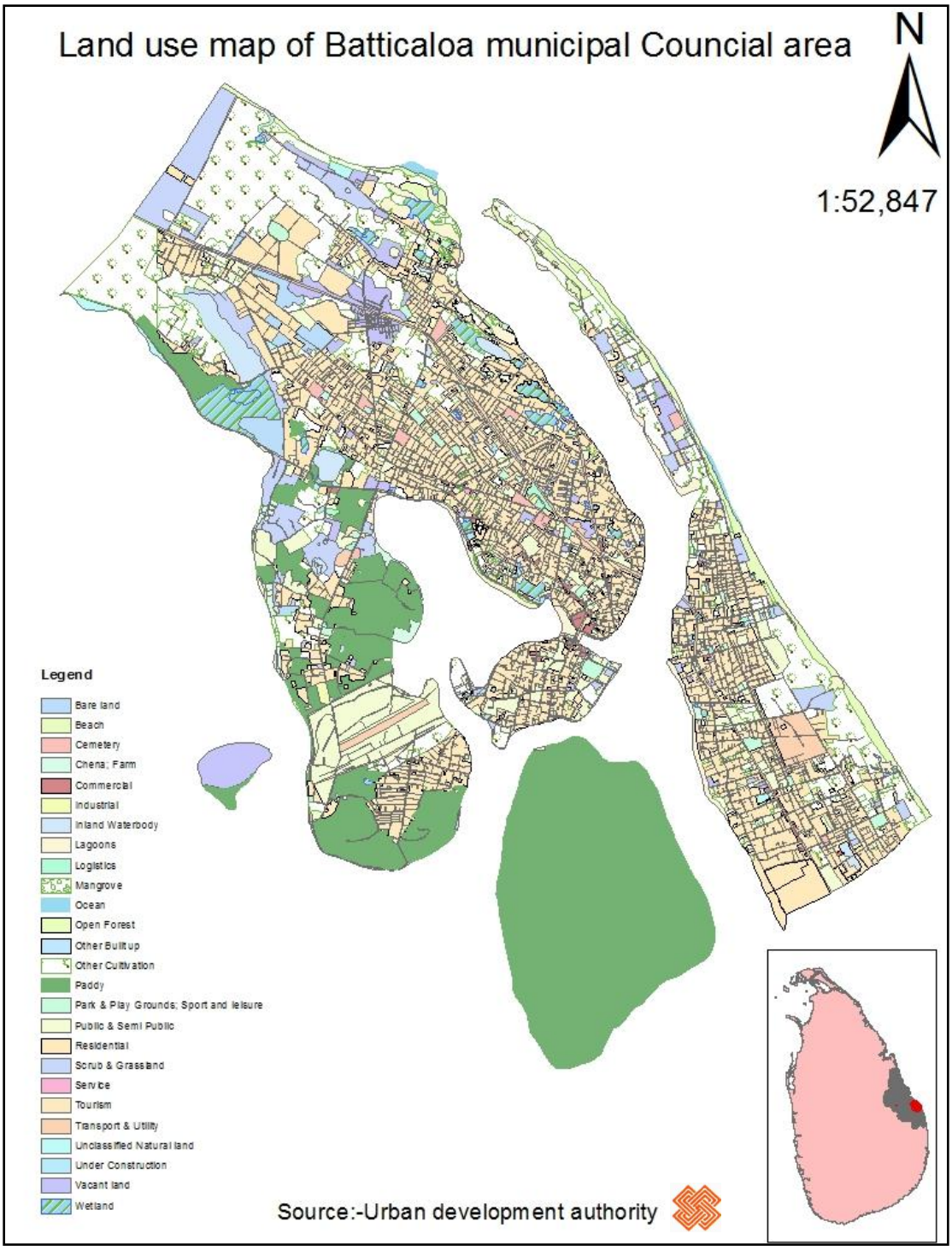


Chart 13: classification of Land Use
Source: Urban Development Authority

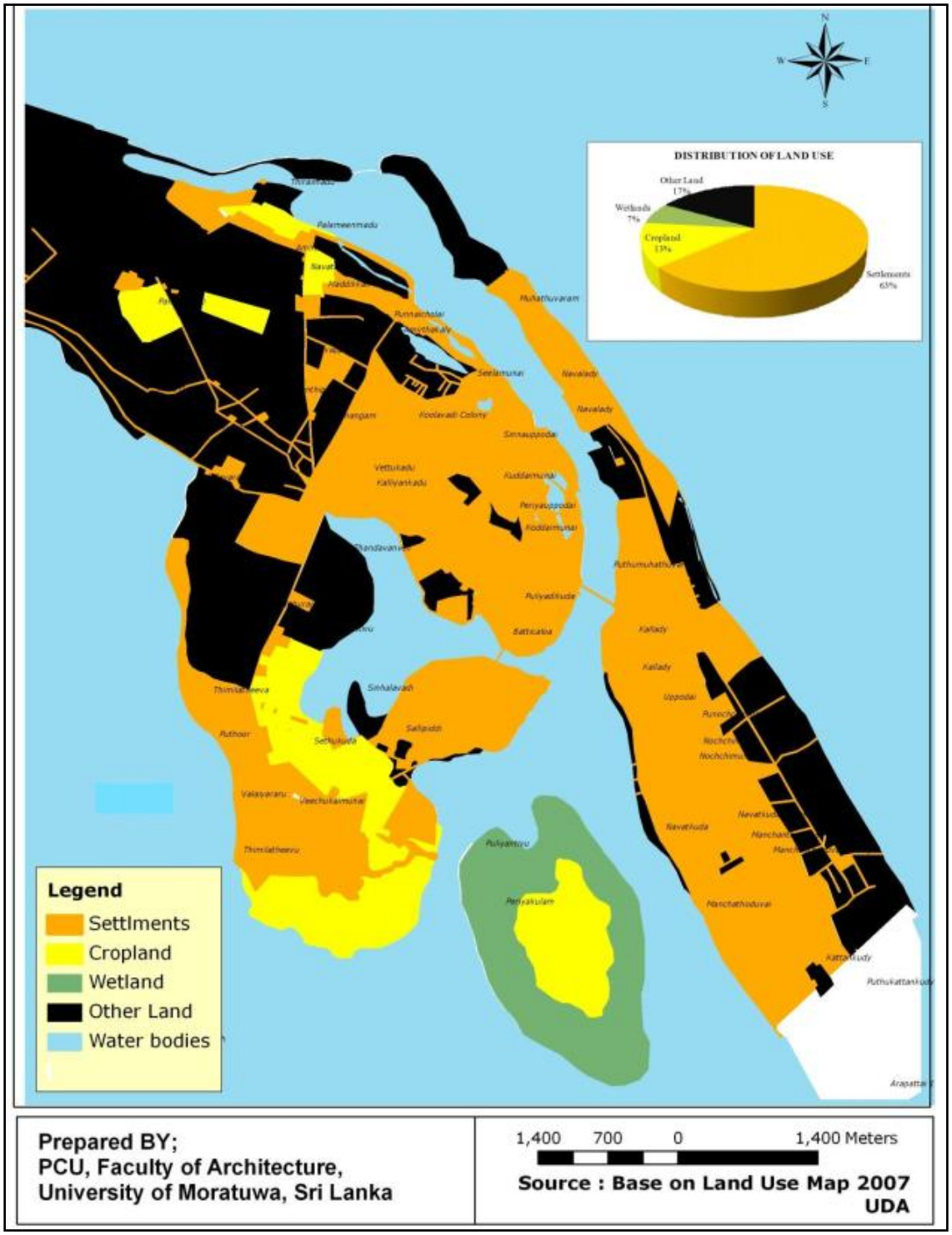


Map 6: Land Uses of Batticaloa MC Area

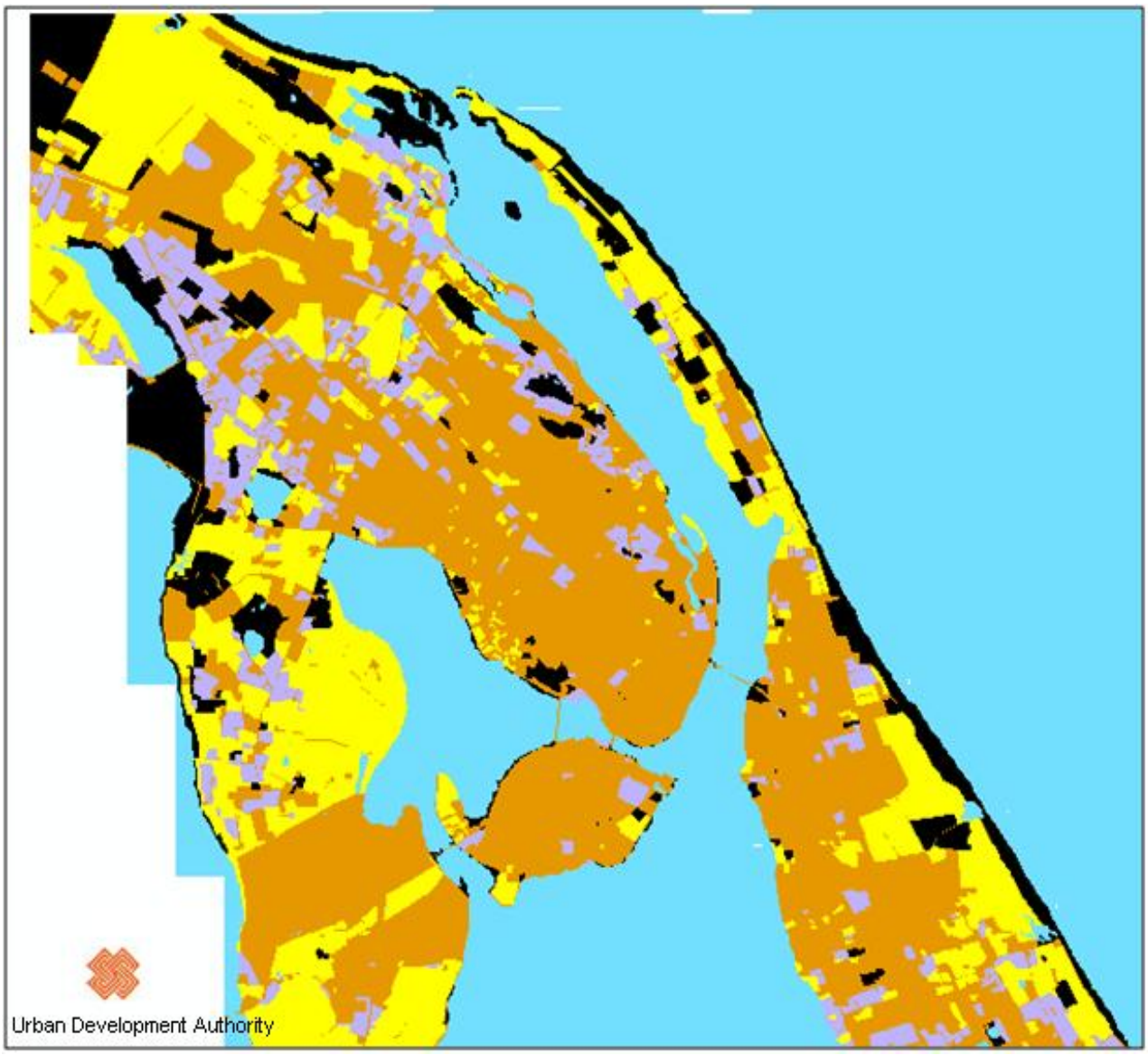
Source: Technical Document on GIS RRS and KMC, Climate resilient action plans for Coastal urban areas in Sri Lanka (CCSL), NIVA, UOM, UN Habitat, 2012.

4.2 Land Uses Pattern with Period Assessment

Map 7: Land Uses of Batticaloa MC Area - 1989
Source: Formulation of a City Development Strategy for Sri Lankan Cities for Climate Change, Project Consultancy Unit, University of Moratuwa



Map 8: Land Uses of Batticaloa MC Area - 2007
Source: Formulation of a City Development Strategy for Sri Lankan Cities for Climate Change, Project Consultancy Unit, University of Moratuwa



Map 9: Land Uses of Batticaloa MC Area - 2013
Source: UDA, Batticaloa District Office

The above Map No. 7,8 and 9 show the evolution of the land use pattern of Batticaloa MC Area in 1989, 2007 and 2013. The existence of large proportion of natural land uses in 1990s and the gradual expansion of the settlement areas into the natural land resources in 2000s are the key observations in the series of maps. Loss of vegetation covers and wetlands are also a major change that has occurred during the settlement expansion.

4.3 Land Value

Navalady and Thiraimadu are the areas with lowest land value in the Muncipal Council Area. The reason is that these areas are located in the disaster prone areas which has directly influenced in the land values. Meanwhile, Puliyanthivu, Urani, Thandavanvali are the areas with high land value because these are located closer to town center with easy access roads and other improved infrastructure facilities, Also, the lands along Trinco-atticaloa, Batticaloa-Kalmunai roads fetched the highest value.

4.4 Land Tenure

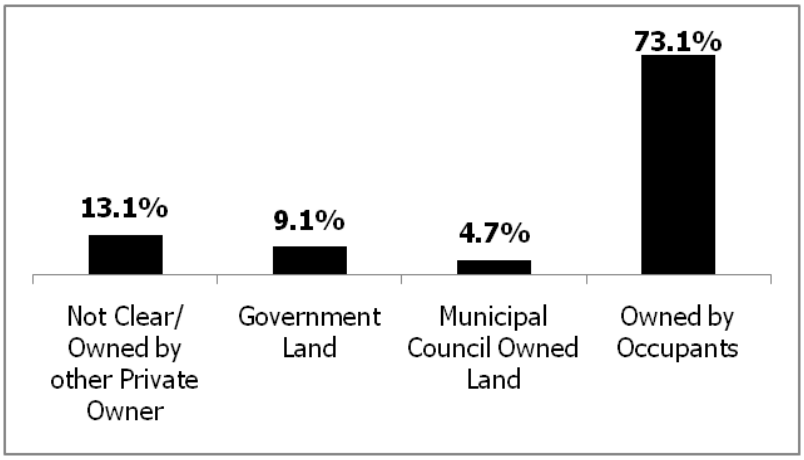
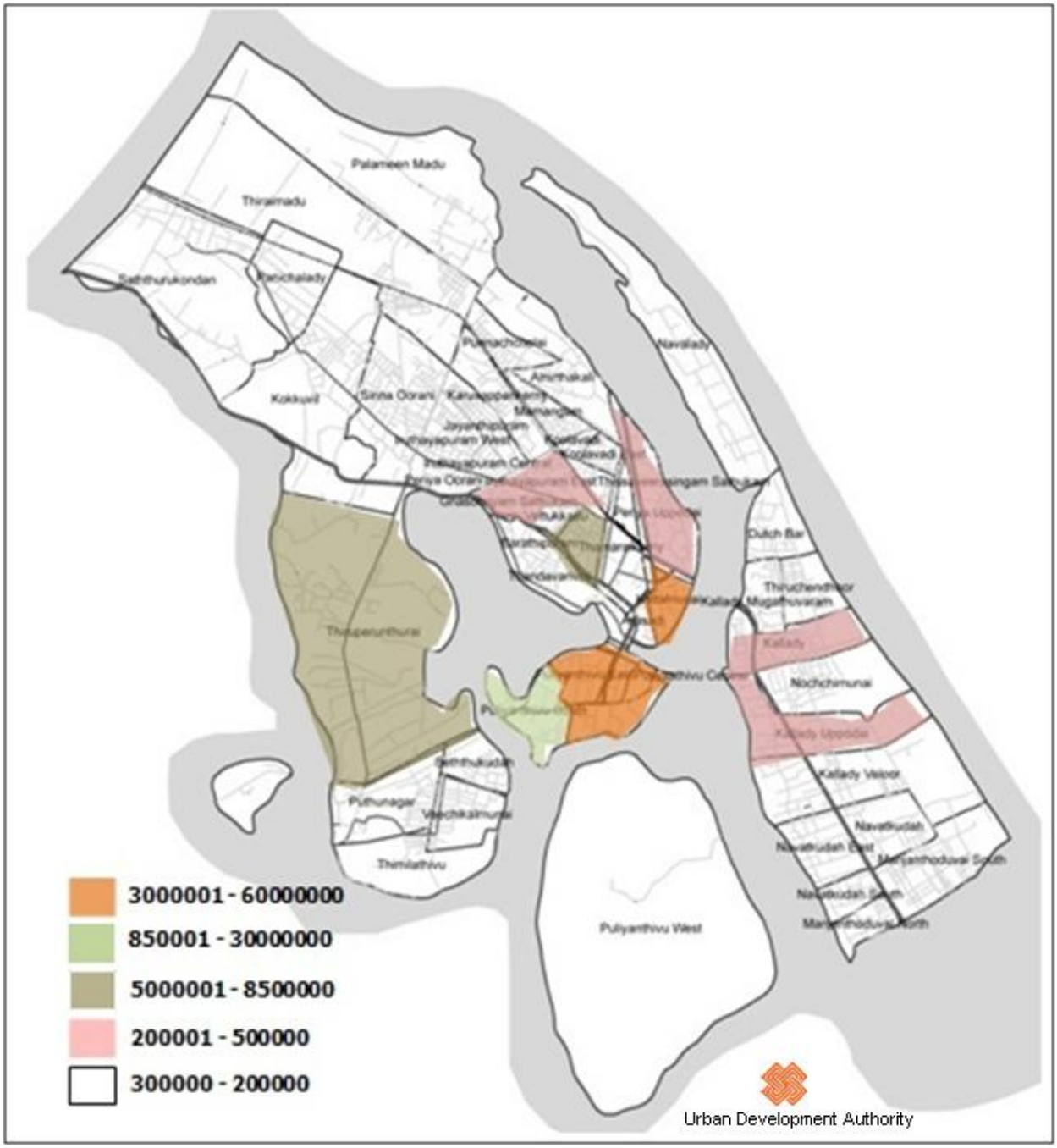


Chart 14: Land Ownership in Batticaloa MC- 2010
Source: UDA, Batticaloa District Office

The above Chart 14 shows that the private owned lands are high in Batticaloa MC Area. Public lands (Government owned and Municipal Council owned lands) are relatively low. 13.1% of occupants do not have clear ownership for their land or else they have illegally occupied another person's land and have constructed their shelters without permission. Nochchimunai and Sinna Oorani have a critical issue on land ownership of communities than other GN divisions in Batticaloa MC Area. Puliyanthivu South, Kalladi Uppodai, Kokkuvil, Punnacholai, Karuvappankerny, Amirthakali and Mamangam are also having land ownership issues in relation to the low income people.



Map 10: Land Value of Batticaloa MC- 2010
Source: UDA, Batticaloa District Office

4.5 Issues and Problems

1. Loss of Environmentally Sensitive Land Areas:

In the recent past, the conversion of agricultural land, wetland, forest areas into residential and commercial uses has been occurred significantly. Thiruchchenthur and Thiraimadu are the areas which are rapidly undergoing the issue of loss of natural lands.

2. Improper and Illegal Subdivisions of Land:

It's been identified that the locally owned land areas in Batticaloa town, Saththurukondan, Uppukkarachchai are illegally subdivided by the local people in order to lease or to sell as the land value in these areas are comparatively high.

CHAPTER 05: HOUSING

5.1 Existing Housing Stock and its Classifications

5.1.1 Existing Housing Units

Year	Housing Units	The difference Each Year (in number)	The difference Each Year (in %)
2007	20,935	-	
2008	22,091	1,156	5%
2009	22,263	172	1%
2010	23,550	1,287	5%
2011	23,819	269	1%

Table 4: Number of Housing Units 2007 - 2011
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

The above Table 04 indicates the number of housing units available in Batticaloa Municipal Council area from year 2007 to 2011. Considering the rate of increase each year, 2008 and 2010 periods have shown relatively high increase in the housing units. However, the trend of increasing housing units each year is remarkable.

Further, the following figure indicates that housing units are increased by 5% in 20008, 1% in 2009, and 5% in 2010. According to the records, there are 23,819 houses available in Batticaloa Municipality in the year 2011, but the number of families occupied has been recorded as 24,928. This clearly shows there is a shortage of 1,109 houses which indicates the presence of shanties in Batticaloa Municipality. According to the statistics, approx. 830 People share houses and toilets.

5.1.2 Housing Condition

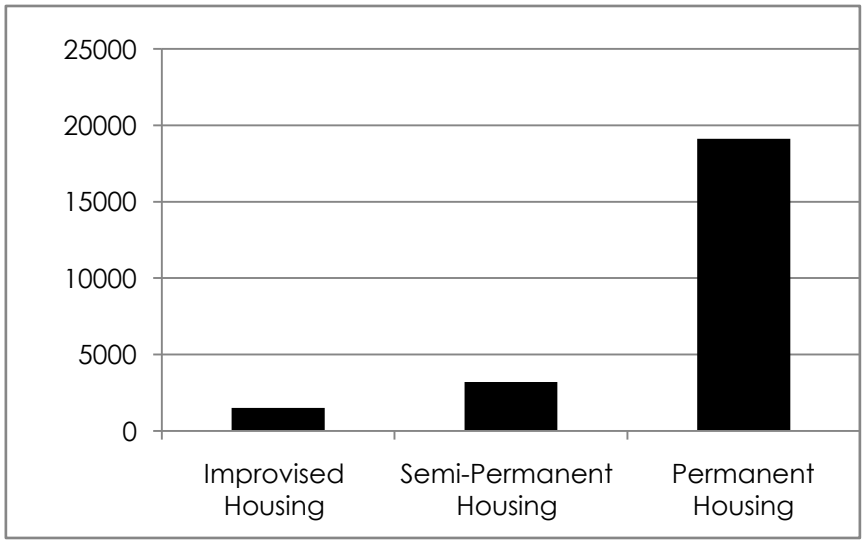


Chart 15: Housing Condition 2011

Source: Statistical Hand Book, Manmunai North Divisional Secretariat

Chart 15 shows the standard of housing condition in Batticaloa MC Area. In terms of the standard of housing, Batticaloa MC Area has very less number of improvised housing and semi-permanent housing.

5.1.3 Composition of Housing Units

The composition of housing units within Batticaloa MC Area is given in Chart 16. The composition has been categorized as Single Storied Single House, Two Storied Single House, More than Two Storied Single House, Annex Houses, Twin houses, Row houses / Line room, and Huts/ Shanties. Single Storied Single House is the dominant type of house in Batticaloa MC Area which shares 88% of the total housing units. Two Storied Single House shares 9%. Low income houses (huts/shanties) shares 2%. The low income houses in BMC area are located in a scattered pattern.

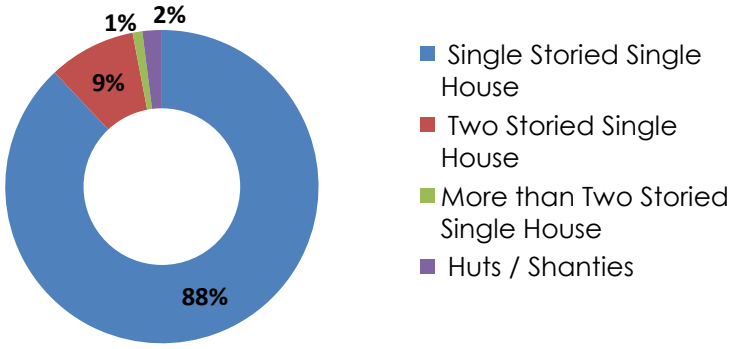


Chart 16: Composition of Housing Units

Source: Statistical Hand Book, Manmunai North Divisional Secretariat

There are Five 05 GNDs namely Dutch Bar, Navaladi, Periya Uppodai, Thamar --aikerny, and Thandavanveli are found without any low income housing units as these GNDs are located close to town center.

Lack of space for residential activities and the physical development that has been taken place in town area have limited the existence of low income housing units within the town center area. According to the below Table 05 Sinna Oorani, Punnacholai, Karuvappankerny, Thiraimadu, Mamngam, Saththurukondal and Kokkuvil GNDs have more than 150 low income families in their peripheries. Those GNDs prominently have rural character than other GNDs in Batticaloa municipality area. Map11 shows the distribution of low income settlements.

G. N Divisions	No. of Housing Units	G. N Divisions	No. of Housing Units
Bharathipuram	1	Koolawadi	71
Puliyanthiv Central	1	Puthunagar	82
Puliyanthiv East	1	Nawatkuddah East	85
Kottamunai	2	Nochchimunai	85
Arasadi	4	Iruthayapuram West	104
KalladiMuhuthuwaram	6	Kokkuvil	149
Nawatkuddah	9	Satthurukondal	168
Manjanthuduvai North	10	Mamangam	173
Vettukadu	11	Thiraimadu	192
Kallady	12	Karuvappenkerny	209
Puliyanthiv West	12	Punnachcholai	230
Gnanasuriam Squire	13	SinnaOorani	290
Iruthayapuram Central	15		
Thirusenthoor	20		
Iruthayapuram East	21		
KalladiVelloor	22		
Panichaladi	22		
Thissa Weerasingham Square	23		
Palameenmadu	26		
Veechikalmunai	32		
Nawatkuddah South	38		
Jayanthipuram	40		
Koolawadi East	42		
Setthukudah	42		
Puliyanthiv South	48		
Periya Oorani	49		
KalladiUppodai	52		
Manjanthuduvai South	54		
Amirthakali	63		
Thiruperumthurai	69		
Thimilathiv	70		

Table 5: Low Income Housing Units by G.N Divisions
Source: “SEVANATHA” Urban Resource Centre

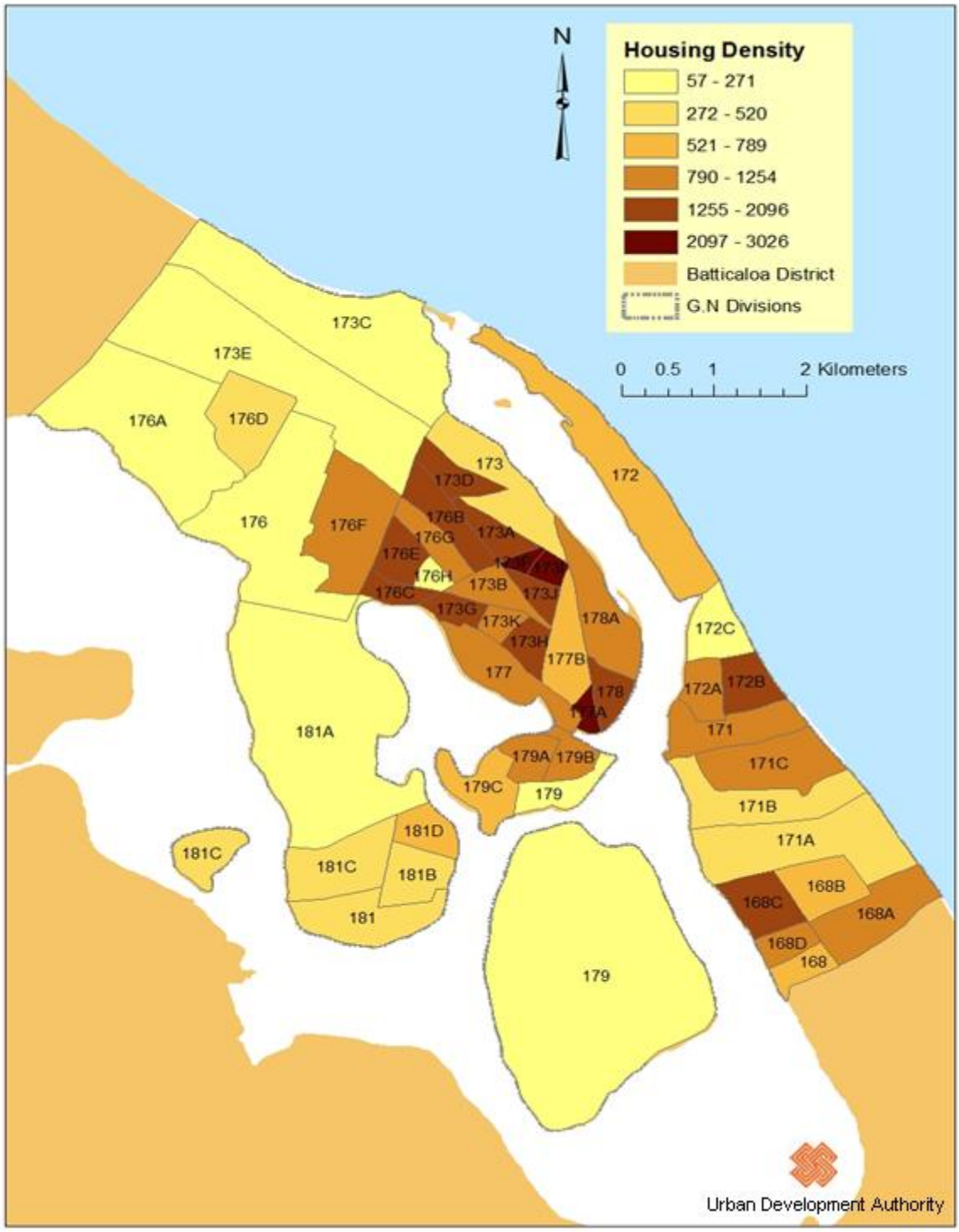
Map 11: Distribution of Low Income Housing Units - 2010
Source: "SEVANATHA" Urban Resource Centre

In the Manmunai North DS division, there are 4 housing Programmes currently being undertaken. Those are namely, Gamaneguma1250 Housing Programme, Janakirula Grant Programme, IFAD 10 Housing schemes.

5.2 Housing Density

Housing density can be calculated as Gross Housing Density and Net Housing Density. In calculating housing density, the total land area of each G.N divisions and number of housing units have been taken into consideration. Batticaloa Municipal Council Area has the highest housing density in Batticaloa District. Out of 48 G.N divisions in the Municipality, Arasady G.N division has the highest housing density.

The lowest housing density has been recorded in Puliyanthivu West G.N division in year 2010. Housing density by G.N divisions has been illustrated in Map 12.



Map 12: Housing Density by G.N Divisions – 2010
Source: UDA. Batticaloa District Office

5.3 Housing Amenities

5.3.1 Source of Drinking Water

The sources of drinking water that are available in the Batticaloa Municipal Council area can be categorized as follows:

1. Well (Protected well within the premise, well outside the premise and unprotected well)
2. Pipe born water (pipe line within the unit, pipe line within the premises but outside the unite and pipe line outside the premises)
3. Others Sources (Rural water supply projects, Tube well, Bowser, bottled water, others)
4. 76% of the households obtain water from protected wells. Only 15% of the households consume pipe born water and 9% of households obtain from other sources. Further, there are areas without pure drinking water sources.

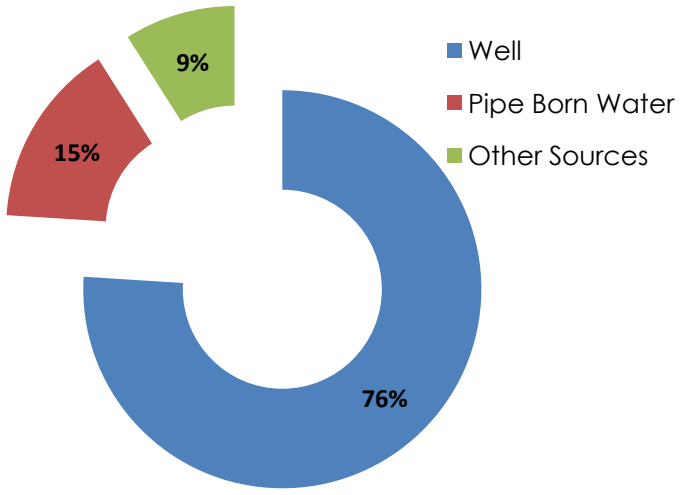


Chart 17: Source of Drinking water - 2010
Source: Statistical Hand Book, Manmunai North Divisional Secretariat

Those are namely, Batticaloa city, Pulliyanthevu, Koddamunai and Thiruperunthunai which are obtaining water from NWSDB. Puthur, Thimilatheevu, Manthevu, Valaiyiravu, and Pillaiyaradi areas face lack of drinking water problems during dry season.

5.3.2 Source of Energy

Analysis of energy consumption pattern by households in the area indicates that majority of the household (90%) use electricity as their major source of lighting and 9% of the household use Kerosene as their source of lighting. Chart 18 indicates the sources of energy use for lighting. Electricity is mainly used by the permanent housing units while kerosene is mainly used by the improvised type of housing units.

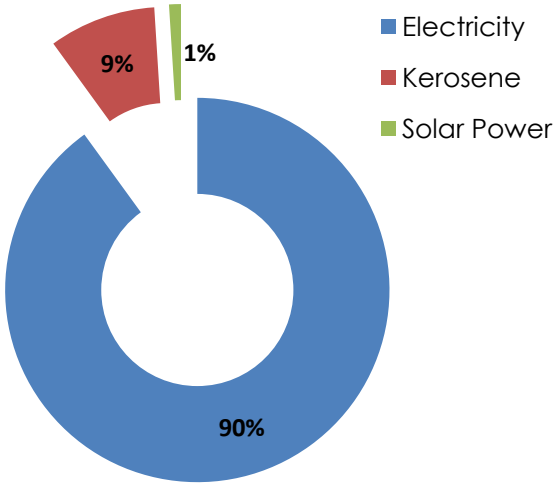


Chart 18: Source of Energy for Lighting - 2010
Source: Statistical Hand Book, Manmunai North Divisional Secretariat

5.3.3 Sanitary Facilities

In Batticaloa Municipality nearly 89% of the households are occupying housing units which have a toilet of their own. 7% have toilets but sharing with other households and 3% of household doesn't have toilet but using other household's toilets. Only 1% of householders do not have proper toilet facilities.

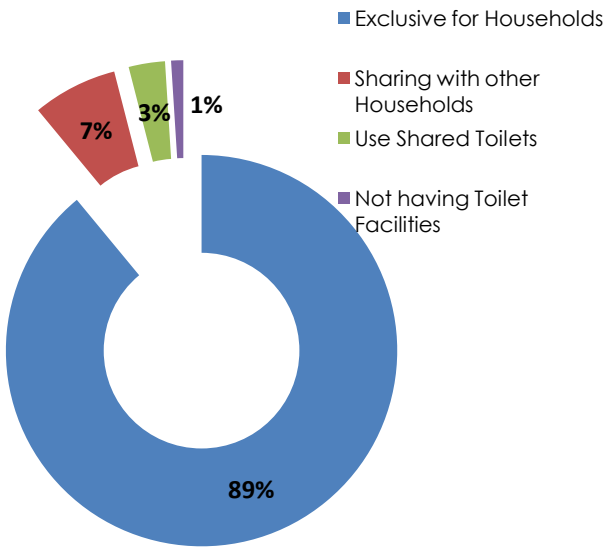


Chart 19: Sanitary Facilities - 2010
Source: Statistical Hand Book, Manmunai North Divisional Secretariat

5.4 Housing Requirement

Following information show the estimated housing requirement of Batticaloa MC Area based on Growth Rate of 2.5%. In year 2011 Batticaloa MC Area had 23,819 housing units which were occupied by 24,928 families. This indicates the shortage of 1109 housing units in year 2011.

Year	Projected Population	Average Household Size	Estimated Housing Requirement
2015	107,002	4.4	24,319
2020	121,019	4.4	27,504
2025	136,872	4.4	31,107
2030	154,802	4.4	35,182

Average household size of Sri Lanka is 4.4 persons. Based on this standard, it is estimated that 24,319 additional housing units will be required by 2015. In addition, 1,506 improvised housing units will have to be converted to permanent housing units in 2015.

5.5 Issues and Problems

1. Housing shortage in Batticaloa MC Area is about 1,109.
2. Lack of sanitary facilities in certain settlements is a major issue. About 830 peoples share with another household & using common toilet.
3. Non availability of safe drinking water in areas such as Batticaloa city, Pulliyanthevu, Koddamunai and Thiruperunthunai.
4. Some areas receive limited supply of water during dry season.
5. 4% of households don't have proper toilet facilities.

CHAPTER 06: ECONOMIC BASE

6.1 Present Economic Base

6.1.1 Major Economic Engines of Batticaloa MC Area

The city plays a key role locally, regionally and nationally due to the below dominant economic engines:

1. Agriculture

Agriculture sector includes paddy, highland crop cultivations, vegetable cultivations, permanent crops, coconut plantations, livestock production, livestock rearing, milk production and fishing activities such as coastal fishing, lagoon fishing, and dry fish production.

2. Industry

Industry sector mainly includes vehicle service stations, fiber glass factory, Petroleum whole sale depot, saw mills, grinding mills, hotels, garments, etc

3. Services

Service sector is comprised of whole sale and retail trades, domestic trade activities, tourism activities which include hotels, restaurants, and cottages and banking, insurance, other financial institutions, etc.

6.1.2 Agriculture Sector

Agriculture is the primary economic engine in the Batticaloa MC Area. The main contributory factor for agriculture is paddy cultivation. The total extent of paddy lands in the MC Area is 1,838 Acres in year 2010. Paddy lands are irrigated under the Galoya Irrigation Scheme. The key areas where paddy cultivation takes place are Buffalo Island, Sathurukondan, Kokkuvil, Thimilathivu, Thiruperunthurai, Veechikalmunai, and Puthunagar areas.

	Maha 2006/2007	Yala 2007	Maha 2007/2008	Yala 2008
Target (Ha)	510.4	42	1500	49
Achievement (Ha)	206.6	42	1434	45
Total Production (Mt)	393,415,110	2,200	97,674	2,060
	Maha 2008/2009	**Yala 2009**	**Maha 2009/2010**	**Yala 2010**
Target (Ha)	2,070	42	2,070	42
Achievement (Ha)	1,635	42	1,620	45
Total Production (Mt)	105,739.5	2,836.02	105,534	2,051

Table 6: Targeted and Achieved Paddy Production during the Period of 2006– 2010
Source: Statistical Hand Book, Manmunai North Divisional Secretariat

The above Table 06 shows a drastic increase in the production during the Maha season (2006/07) and Yala 2007 season. Paddy extent targeted, gross extent sown, gross extent harvested net extent harvested and production – Maha 2010/2011 is shown in the below Table 7. Accordingly, highest net harvested has been recorded from Puliyanthivu and Puthunagar G.N Division areas.

G.N Division	Target Extent (Ha)	Gross Extent Sown(Acres)	Gross Extent Harvested (Acres)	Net Extent Harvested (Acres)	Estimated Production (Bushels)
Sathurukondan	9,906	249	240	240	18,000
Thiruperunthurai	15	35	32	32	1,920
Puthunagar	263	658	655	655	42,575
Puliyanthivu	390	975	973	973	68,110

Table 7: Paddy Extent Targeted, Gross Extent Sown, Gross Extent Harvested, Net Extent Harvested and Production – Maha 2010/2011
Source: Department of Agriculture

Crops	Extent (Ha)	Production (kg)
Maize	0.4	421
Green Gram	0.20	103.5

Table 8: Extent and Production of Cereals, Pulses & Yam during the Period (2009/2010)
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

Vegetable cultivation during the period of (2009/2010) as follows:

Crops	Extent (Ha)	Production (Kg)
Manioc	5.75	72175.12
Chilies	1.63	3684.43
Sweet Potatoes	1.52	7623.75
Brinjal	2.99	26875.71
Bitter Guord	1.48	9942.33
Snake Guord	1.61	9051.4

Table 9: Extent and Production of Vegetables during the Period (2009/2010)
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

Production of permanent crops during the period of 2010 as follows:

Crops	Extent (Ha)	Production
Areca Nut	0.92	866.81 (kg)
Cashew	6.36	419 (’000 Nuts)
Oranges	2.86	28,300 (No.)
Limes	1.11	9800 (No.)
Mango	25.88	84,6563 (No.)
Jak	1.57	9188 (No.)
Bread Fruit	0.45	47 (No.)
Sugar Cane	0.05	127 (kg)
Plantain	15.67	14625 (Bunches)
Papaw	2.43	24500 (No.)

Table 10: Extent and Production of Permanent Crops during the Period of 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

In addition to paddy cultivation, highland crop cultivations (Cereals, Pulses and Yam), vegetable cultivations, permanent crops cultivation and coconut production also contribute to agriculture sector in Batticaloa MC Area. According to the available statistics, there were 38 acres and 25 acres of coconut cultivated in 2001 and 2010

respectively. Following Table No. 11 describes the extent of coconut planted during the period of (2001- 2010).

Year	Acre . Root . Perches (A.R.P)
2001	38.2.00
2002	87.3.00
2003	30.2.00
2004	02.3.00
2005	11.0.00
2006	31.0.00
2007	19.2.00
2008	10.0.00
2009	30.1.00
2010	25.3.00

Table 11: Extent Coconut Planted During the Period of 2001 – 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

Further, there are 6 Palmyra Product Training Centers located in Batticaloa Municipality area where 73 persons engaged in the training in 2010. The Palmyra Development Board received income of Rs. 1,338,287 by selling of Palmyra products in the Katpakam Sales Centers in 2010.

6.1.3 Livestock Production

Livestock is one of the major contributors for the economy in the Batticaloa MC Area. Dairy farming and slaughtering industries also associate under this sector. In year 2010, approx. 146,245 liters of milk was produced in Batticaloa municipality area. The dairy industry has a greater potential for providing extensive and gender balanced employment opportunities in Batticaloa city. Livestock statistics of neat cattle and buffaloes in 2010 have been given in the Table 12.

Type	Number	Average Monthly Milk Production (Liters)
Neat Cattle		
Milk Cows	5,058	143,095
Other cows	1,998	
Buffaloes		
Milk Cows	62	3,150
Others	34	

Table 12: Live Stock Population in 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

Goats and Poultry farming also contribute to animal husbandry sector in addition rearing of Neat Cattle and Buffaloes. Monthly Average Egg Production is approx. 39,440. Following Table is the details of Goats and Poultry industry as of 2010.

Type	Number
Goats	1,912
Chickens	
Cock Birds	9,963
Laying Hens	14,390
Other Hens	4,083
Chicks	15,870

Table 13: Live Stock (Goats and Poultry) Population in 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

6.1.4 Fishing

Year 2011 statistics denoted that there are 2,499 fishing families who depend on marine fisheries and lagoon fisheries. 2,416 active fishermen are engaging in the fishery sector activities. 22 Rural Fisheries Organizations are found in Batticaloa in year 2011 having 1,383 members. There are 18 fishing centers in the Batticaloa Municipal council area having operated 1,096 crafts during the same period. 1,920 lagoon fishermen and 2,986 deep sea fishermen occupy 35 villages of the city. Batticaloa city is famous for its prawns and crabs. The industry related to prawns and crabs has a long history. In 2011, Sri Lanka Air Force model farm engaged in prawn farming in an area of 3.5 Acres of the city.

The production details of sea foods and lagoon foods have been shown as follows:

Type	Amount (kg)
Sea Fish	8,397,439
Lagoon Fish	
Prawn	5,207

Table 14: Production of Coastal and Lagoon, Sea Fishing in 2011
Source: Statistical Hand Book, District Secretariat, Batticaloa-2011

Fishery community demographic information is give below:

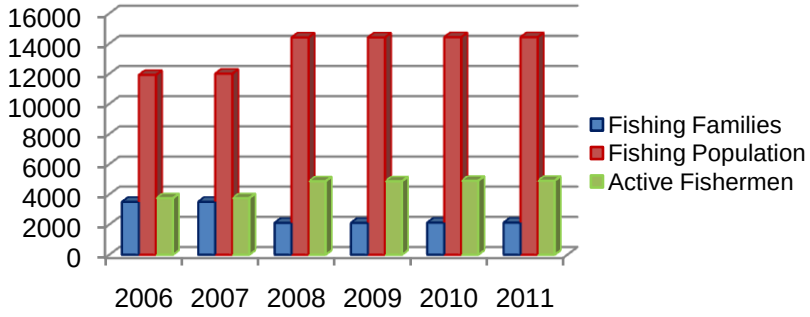


Chart 20: Fishing Population 2006 – 2011
Source: Department of Fishery & Aquatic Resources, Batticaloa-2011

Fresh fish production of coastal fisheries from 2007 to 2011 is as follows:

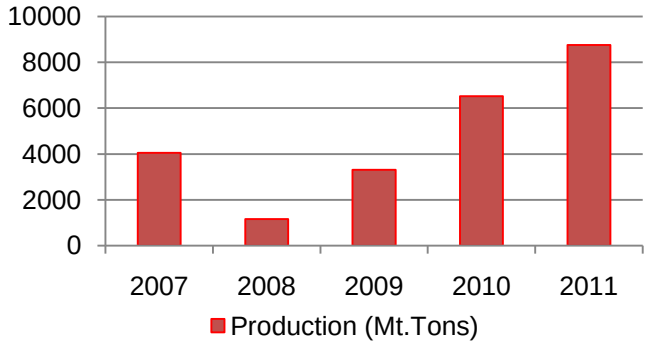


Chart 21: Fresh Fish Production 2007 – 2011
Source: Department of Fishery & Aquatic Resources, Batticaloa-2011

It is noted that Batticaloa District contributes 9% for the fish production in Sri Lanka. The fish production of Batticaloa Municipality has been increased by 34% between 2010 and 2011. High production was recorded in coastal fishing (116 percent) compare to the production in 2007. Therefore, it is necessary to increase the fishery fleet in Batticaloa Municipality through improvements in fishery infrastructure to reach the full potential of production in the city.

Dry fish production from 2006 to 2011 as follows:

Batticaloa District is also famous for high quality dry fish. Chart 22 shows that the dry fish production between 2010 and 2011 has been increased by 55 percent to 1700 Metric Tons.

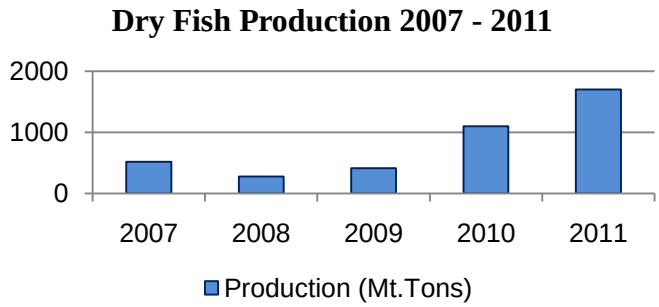


Chart 22: Dry Fish Production 2007 – 2011
Source: Department of Fishery & Aquatic Resources, Batticaloa-2011

The following Figure 21 shows the inland and coastal fishing locations in the BMC Area.

The topographical feature of Batticaloa city provides many feasible locations for fishermen to engage in fishery activities. Its natural anchorage setting at the lagoon mouth and the existing lagoon with islands are more suitable to engage in safe fishery activities.

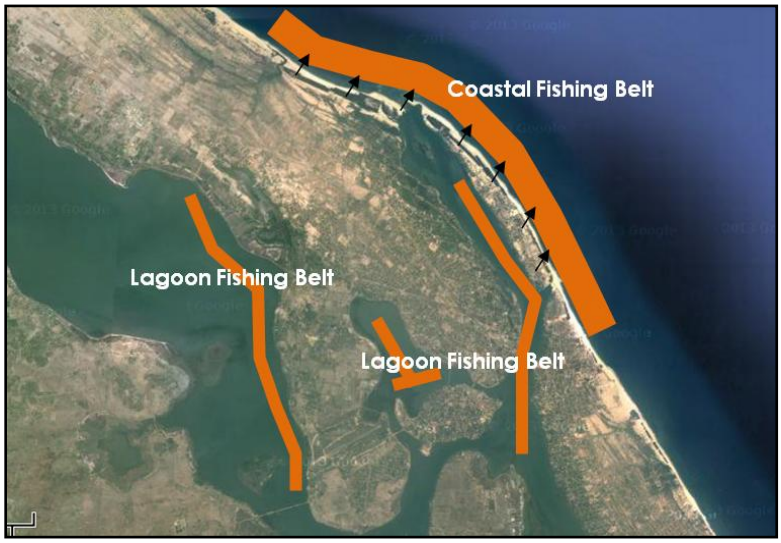


Figure 21: Coastal and Lagoon Fishing locations
Source: UDA, District Office, Batticaloa

However, there are certain environmental issues identified associated with the prawn farming industry. At Thiruperunthurai area there are about some illegal prawn farms spots have been identified. Water for the ponds has pumped from the lagoon and then discharged back into the lagoon after use. When the effluent is discharged into the lagoon, chemicals such as Dolomite and Calcium Carbonate are mixed into the lagoon.

Water quality condition in Batticaloa lagoon at Manchanthoduwai is very poor, with large mats of green Algae floating at the surface, dead water Hyacinth covered the crab cages has become a major issue. Water has a bad odor and has high turbidity due to phytoplankton in many areas.

6.1.5 Industry Sector

According to the Department of Industries in Batticaloa MC Area, total value of the production of small / cottage/ micro/ self-employed was recorded as Rs. 5,000. In 2010 and 2011 the value has been increased by 40 percent. In addition to these industries, the regional industrial development programme of Ministry of Industry and Commerce (MIC) has been proposed industrial estates in Thiraimadu area within Batticaloa municipality.

Classification of industries in 2011 by its possibility to pollute the environment has been listed in Table No. 15.

Highly Polluting Industries		**Low Level of Polluting Industries**	
Category	**Number of Industries**	**Category**	**Number of Industries**
Vehicle service stations	7	Saw mills	12
Fiber glass factory	1	Grinding mills	7
Petroleum whole sale depot	1	Restaurants	30
		Hotels	36
		House based eateries	30
		Bakeries	34
		Rice mills - Wet process	6
		Rice mills - Dry process	1
		Press	13
		Garage	39
		Garment factory	1
		Filling station	7

Table 15: Number of High and Low Polluting Industries in the BMC area in 2011
Source: Department of Industries, Batticaloa

6.1.6 Service Sector

Service sector of the Batticaloa MC Area includes commercial activities (whole sale and retail sale), health, education, banking services and tourism activities. Batticaloa city has been identified as the major service center for Batticaloa District. People from

many adjacent parts of the region are daily, weekly and monthly commuting to Batticaloa to obtain many services.

6.1.6.1 Whole Sale and Retail Trade

The town centre of Batticaloa functions as the major transit point for commuters from adjoining town centers of the Batticaloa District. Therefore, the demand for many kinds of whole sale and retail commercial services is created by the locals and outsiders.

There are 1,284 registered enterprises in Batticaloa municipality. This includes: 446 groceries, 52 tea boutiques, 25 cool spots, 25 bicycle repair centers and 88 textile shops. Following Table No. 16 details the type of business and its numbers.

Type of Business	Total	Type of Business	Total
Groceries	446	Fruits Sale	18
Tea Boutique	52	Liquor Shop	20
Jewellery	55	Eating Houses	30
Textiles	88	Garage	39
Tailoring	28	Rice Sale	13
Cycle Repair	25	Shoe Sale	20
Saloon	48	Hardware	33
Communication	12	Sawn Timber Sales	13
Video Recording	18	Concrete Products Sale	9
Cool Spots	25	Grinding Mill	7
Fancy Items Sales	79	Pharmacy	13
Vegetable Sales	37	Bicycle Parts	24
Gold Smith Work Shops	36	Cellular Phone Sales	27
Bakery	34	Electric Tools Shop	12
Wedding works	23		

Table 16: Details of Enterprises in Batticaloa City – 2011
Source: Batticaloa Municipal Council

6.1.6.2 Tourism

The Eastern coast of Sri Lanka is identified as a major tourism zone by the National Physical Plan 2030 due to its potentials such as sea beaches, islands, natural scenic beauty, wild life, heritage and cultural assets. Being part of the Eastern coast, Batticaloa plays major role in attracting tourists for a long period of time. The high connectivity of the town, affordable services it provides and its unbeatable scenic beauty are the main reasons for the continual arrival of local and foreign tourists. Batticaloa has also earned considerable reputation as a tourism destination even prior to the ethnic conflict, with its

pristine beaches, diverse wild life and ecological habitats, places of cultural and heritage value as well as some unique characteristics which are not found in the other parts of the country. Currently there is tremendous enthusiasm among the local people from all over the country to visit Batticaloa, at the same time considerable amount of foreign tourist also visit Batticaloa.

Figure 22 shows the proposed tourism development areas in Sri Lanka. Accordingly, entire Eastern province has been identified as Ocean Based Tourism Development Area. Passikudah, Kalkudha, Batticaloa and Kalmunai are the identified key towns in the Battocaloa District to act as Beach Tourism Development Areas. The beaches of these towns are popular for its beauty, safety and availability of the services for visitors.

Figure 22: Development Areas of Tourism Industry
Source: National Physical Plan 2030

1. Sea Beaches:

Batticaloa MC Area possesses 12 km shoreline. Many parts within the 12 km stretch have scenic beaches which are highly used by locals and visitors for leisure and pleasure. The sea beaches in Kallady, Navalady, Navalkudha, Thiruchchandhur, Dutch bar, light house area and Paalameemadu area are some of the popular destinations.

Image 18: Scenic Beauty of Batticaloa Beaches

2. Batticaloa Lagoon

The Batticaloa Lagoon is the 2nd largest lagoon in Sri Lanka and the 1st largest in the Eastern province. The lagoon is about 56 km long 162 sq km area. The iconic landmark of Singing Fish was found in this lagoon. Batticaloa Lagoon presents unique opportunities for boating, fishing and birds watching.

Image 19: Beauty of Batticaloa Lagoon

3. Sathurukondan Wetland:

Sathurukondan Wetland extends upto approx. 75 Ha, separates from the main Batticaloa lagoon by the A15 Batticaloa-Trincomalee Road. Sathrukondan Wetland is known for its extensive bird population including few of the rare species such as the Lesser Adjutant Stork, Leptoptilus Javanicus and Spot Billed Pelican Pelecanus philippensis. In addition, a vulnerable kind of crocodile called "Crocodylus palustris" also found in this wetland.

Image 20: Sathurukondan Wetland

4. Islands:

There are four islands located in Batticaloa Lagoon namely Puliayantheevu, Buffaloa Island, Bone Island, Manthivu. Many bridges have been built across the lagoon connecting the landmasses and the islands.

Image 21: Bone Island

5. Dutch Fort:

Batticaloa Dutch Fort has been identified as a site for the promotion of cultural tourism. The restored forts itself is a part of tangible culture of Batticaloa. The fort was built by the Portuguese in 1628 and was the first to be captured by the Dutch (18 May 1638). It is one of the most picturesque small Dutch Fort of Sri Lanka. The fort has a structure of four bastions and protected by the Batticaloa Lagoon from two sides and a canal of the other two sides. Presently the Fort is occupied by the District administrative offices. The Fort Conservation Project is currently commenced.

Image 22: Lagoon side of the Fort

Image 23: The View of Fort from the Opposite Side of the Lagoon

6.1.6.3 Banking and Insurance

In facilitating the commuter population and increasing local population, the banking sector plays a key role. Within the Batticaloa Municipality area there are financial institutions such are banks and insurance companies function to serve the public on financial needs and other related needs. Branches of the financial institutions, banks and insurance companies located in the BMC are as follows:

Banks within the BMC Area	Insurance Companies within BMC Area
PEOPLES Bank – 2 branches	Ceylinco Insurance
Bank of Ceylon – 2 branches	HNB Assurance
Hatton National Bank - 2 branches	Amana Insurance
Sampath Bank	Union Assurance
National Savings Bank	Jana Shakthi Insurance
Commercial Bank	LIC Insurance
Seylan Bank	
Lanka Puthira	
Cooperative Rural Bank	

Table 17: Banks and Insurance within the BMC Area

Financial transactions of certain important banks in the area in 2011 are given below:

Name of Bank	Total No. of Accounts	Savings (Rs. Millions)	Fixed Deposits (Rs. Millions)	Other Deposits (Rs. Millions)
Hatton Nation Bank	29,713	730	550	10
Seylan Bank	35,591	405	1,030	74
National Savings Bank	108,910	735.02	2,046.68	98.7

Table 18: Financial Transactions by Banks in the Area - 2011
Source: Resource Profile, Manmunai North Divisional Secretariat - 2011

6.2 Employment Pattern by Sector

Population by sector of employment has been shown in Chart 23. There were 63,964 employed persons in 2010. Statistics reflect that majority of persons work as laborers (36%). In the below graph, "Other" denotes laborers. The second highest category of workers is employed in Government Sector which is 22.5%. Other dominant sectors of employment are self-employment sector (13.5%) and fishery sector (10.5%). Agriculture, foreign employment and semi-Government sectors are the least dominant employment sectors in Batticaloa Municipal Council Area.

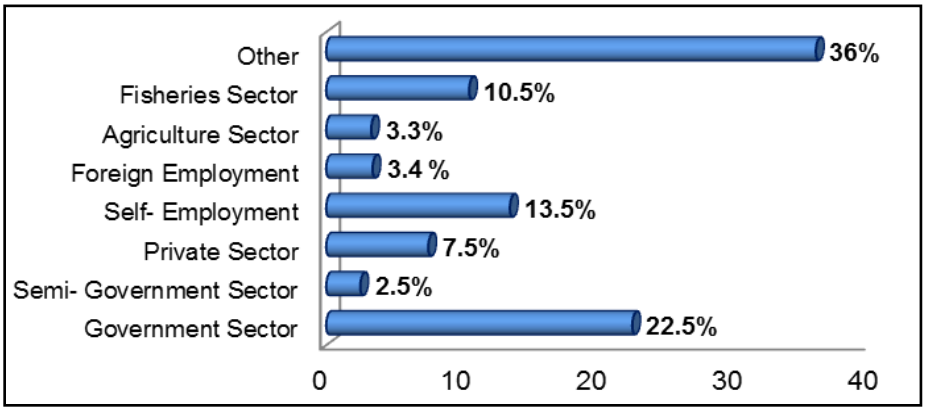


Chart 23: Percentage Share Employments pattern by Sector – 2010
Source: Statistical Hand Book, District Secretariat, Batticaloa-2010

6.3 Issues and Problems

1. Illegal Prawn Farming:

At Thiruperunthurai area, there are about 15 illegal prawn farms function along the lagoon shore. Illegal cultures of farming and inappropriate equipments are found in the Thirupperuthurai area. Further, chemicals namely dolomite and calcium carbonate are used for prawn farming activities.

2. Lagoon Pollution:

Water quality in Batticaloa lagoon at Manchanthoduwai is very poor, with large mats of green algae floating at the surface, dead water hyacinth also present at crab cages. Water has a bad odor and has high turbidity due to phytoplankton.

3. Substandard and Unregistered Tourist Hotels:

Certain hotels in the BMC area are listed as supplementary establishments which are neither registered nor approved by the SLTDA. There are also other hotels and restaurants which are not in the supplementary list and in many cases not even registered with the Local Authority, although such registration is required according to the by-laws of the Local Authority.

CHAPTER 07: INFRASTRUCTURE FACILITIES

7.1 Physical Infrastructure Facilities

7.1.1 Road Network

Present road network of Batticaloa Municipality was established during the British Era. There is approximately 87.06 km length of roads available in Batticaloa Municipality which is consisted of 15.5 km length of 'A' class roads, 14.94 km length of 'B' class roads and 56.62 km length of 'C' class roads. 'A' and 'B' class roads are maintained by Road Development Authority and 'C' class roads are maintained by the Municipal Council. Batticaloa MC Area has good conditions of road network and high connectivity among all parts of the city and region.

There are two main arteries such as A15 (Batticaloa- Thirukondiyadimadu- Trinco Road) and A04 (Colombo- Ratnapura - Wellawaya - Batticaloa Road) travel through Batticaloa MC Area. Further, there are three main access roads which go through Batticalo city, connecting Vavunathivu, Eravur, Kaththankudhy suburban centers, meanwhile South and West side of the city is connected by Kallady and Vavunathivu bridges.

Table 19 gives the detailed breakdown of the roads in the Batticaloa Municipality by category.

Road Category According to the Ownership	Road Length
Road Development Authority	15.5 km
Road Development Department	14.94 km
Batticaloa Municipal Council	56.62 km

Table 19: Category of Roads and Length

A and B class roads play a key role in the Batticaloa Municipality by linking the national level cities and regional centers. They function as main access roads to the Batticaloa Municipality. Table 20 shows the special functions of 'A' class road in the Municipal council area.

Map 13: Road Network of Batticaloa Municipality Area
Source: UDA, Batticaloa District Office

Road Category	Name of the Roads	Length Within BMC Area	Special Functions
A 015	Batticaloa-Thirukondiyadimadu-Trincomalee Road (BTT Highway)	9.65 Km	This road links Batticaloa to Trincomalee along the Coastal belt. This is an alternative road for Batticaloa to reach Colombo in case of linkage interruptions in A004 road.
A 004	Colombo - Ratnapura - Wellawaya - Batticaloa Road (CRWB Highway)	5.85 Km	This road links Batticaloa to Uva, Sabaragamuwa and Southern Region via Ratnapura, Beragala, Wellawaya. This road plays vital role in commercial & tourist activities of Batticaloa.

Table 20: Special Functions of 'A' class Roads in the Municipal Council Area
Source: Road Development Authority

Table 21 shows the 'B' class roads within BMC Area:

Road Category	Road Name	Length
B - 030	Road to Batticaloa Railway Station	1.20 km
B - 46	Bar Road	4.67 km
B - 250	Lake Road	0.90 km
B - 298	Munai Street	0.43 km
B - 337	Old Road	3.10 km
B - 433	Urani Road	3.22 km
B - 543	Lioyds Avenue	0.42 km
B - 542	Lady Manninng Drive	1.00 km

Table 21: 'B' class Roads in the Municipal Council Area
Source: Road Development Authority

10 % of the total land area of the Batticaloa Municipal Council area is identified as road network. 60% of road network is used to access residential areas. 80% of the local roads have the capacity of 8-15 feet width. Width of "A" class roads is 60 feet and width of the "B" class road is 30 feet.

In terms of the condition of the roads, most of the important local roads are in damaged due to frequent flash floods and lack of maintenance. It was found in year 2012, only 60% of the total local road network has been paved. In terms of the width of the roads, it is found in Puliyanthivu area which accommodates many important activities of the town, the road width is inadequate to cater the functions and demand of that area.

Issues related to the Road Network:

1. Most of interior roads in the city are damaged.
2. The width of some of the interior roads is not adequate.
3. Due to the inadequate capacity of the drainage which is located both sides of the roads, many roads are flooding during rainy days.
4. Lack of pedestrian pavements and poor condition of pedestrian pavement prevail in most of the roads. This has been the main reason for traffic congestion.
5. Due to inadequate parking spaces specially in the towns center, local residents, visitors and outsiders face difficulties.
6. There are no designated building line and the street line for the interior roads within the municipality. This causes traffic congestion and accidents in many parts of the city.

Traffic Congestion and Lack of Parking Spaces

Traffic congestion is a most prevalent transport problem in any urban areas due to high level of accumulation and concentration of economic activities. Similarly, it is also a major transport related issue in Batticaloa MC Area. The main reason for traffic congestion is the concentration of commuters for many purposes and inadequate parking space within the town centre.

New Bridge and Koddaimunai Bridge in Pulliyantheevu are the two black spots of traffic congestion. This is very severe during regular working hours. Relatively large number of accidents takes place in north side of White Bridge. There is no signal light or traffic police available in these highly critical spots. Further, improper way of road crossings of pedestrians also a major reason the road accidents.

Chart 24 shows the share of the dominant category of vehicles within the BMC Area.

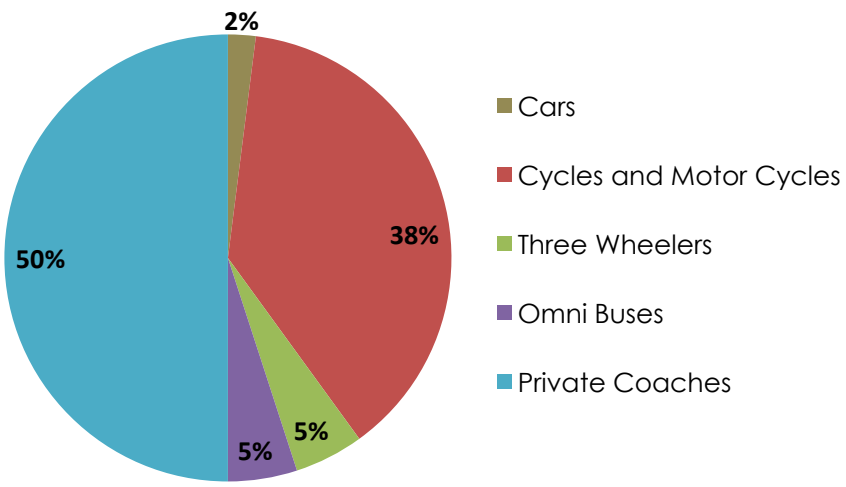


Chart 24: Share of the Dominant Category of Vehicles within the BMC Area

7.1.2 Transportation Service

1. Bus Transport:

BMC area daily attracts thousands of people from other regional centers for the commercial, institutional (educational, health & administration) and other activities. The visitors have been facilitated by inter & intra-regional public/private bus and rail transportation system. Public transportation is mainly provided by the State owned Sri Lanka Transport Board (SLTB) and by private bus operators. More than 500 private buses and 320 public buses are operated within BMC Area. There are nearly 31 approved bus routes used by 11,168 passengers per day.

Frequency of the bus routes starting from Batticaloa town has been shown in Table 22.

From	To	Frequency
Batticaloa Town	Valachchenai	Every ½ Hour
Batticaloa Town	Kalmunai	Every ½ Hour
Batticaloa Town	Akkaraipattu	Every 1 Hour
Batticaloa Town	Batticaloa hospital	Every 15 minutes
Batticaloa Town	Muyaththuwaram	Every 4Hour
Batticaloa Town	Thiraimadu, Satthukondan,Valayaravu, Veppavadduwan, Pullumalai	2 buses per day
Batticaloa Town	Colombo	5 time per day
Batticaloa Town	Kathuruwala, Jaffna	3 time per day
Batticaloa Town	Vavuniya, Badulla, Kandy, Muthur,Poththuvi, Panadura	1bus per day.

Table 22: Frequency of Bus Transportation in Batticaloa City
Source-Sri Lanka Transportation board

Issues related to Bus Service

1. Commuters and visitors face difficulties due to the absences of frequent long distance bus services.
2. Even though the railway station is located 1km away from the main bus terminal, there is no Bus – rail transit linkage system.
3. There is no bus service before 6am and after 6pm from Batticaloa to Kalmunai and Valachchenai.

2. Railway Transport Service

The main railway station of the Batticaloa District which belongs to the British Era is located 1km from Batticaloa town center. The railway track is single from Gal Oya to Trincomalee and Batticaloa. Since the railway tracks are weak, speed restrictions are imposed and trains travel at an average speed of 24 Km/hr only. A passenger train takes 8-10 hours to reach Colombo form Batticaloa. More than 550 train tickets are issued per day. Number of commuters who travel from and to Batticaloa ranges between 250 and 400. Details about the train services have been shown in the Table 23.

Train name	To	Departure Time	Arrival time
Uthay Devi-6012	Colombo	07:15 AM	03:25PM
Uthay Devi-6084	Colombo	05:45 PM	04.05AM
Padumeen-6080	Colombo	08:15PM	04:55AM
Mixed Train-6891	Maho junction	10:30AM	06:00PM
Rail Bus	Galoya Junction	05.10 AM	08.45 PM
Mixed Train-6891	Batticaloa	06.00 AM	01.30PM

Table 23: Details about Train Services, *Source: Railway Station, Batticaloa*

The National Physical Plan 2030 has proposed a railway network expansion from Batticaloa to Hambantota via Ampara. This will be a great potential for freight transportation and passenger transportation. This will ease the passenger transportation between Colombo – Ampara since presently passengers use bus service to reach Batticaloa railway station.

Issues related to the Train Transport

1. Inadequate waiting rooms and no proper sanitary facilities in the railway station.
2. Inadequate washing rooms for large number of passengers.
3. The replacement of wooden sleepers on Eastern line is an immediate requirement in order to avoid the speed restrictions and delays.

3. Air Transport

Batticaloa airport is located close to the Batticaloa town at 07^{o} 42’ 12” N and 81^{o} 40’ 42” E coordinates. This airport has 1,056 ft long and 46 ft wide runway with flight path 06/24. The airport has been currently used by Sri Lanka Air Force (SLAF). At present, only lighter aircrafts fly for two days a week between Batticaloa airport and Colombo. Due to the upcoming airport expansion project, the construction of multi storied buildings around the airport vicinity is prohibited. Further, necessary land area for the expansion purpose is also acquired.

Under the vision of becoming the Aviation Center of the Asia, the National Physical Plan 2030 has proposed to construct new international airports and to expand the existing domestic airports. Accordingly, the National Physical Plan 2030 has proposed expansions of ten domestic airports around Sri Lanka. Vallayaravu Batticaloa Domestic Airport is one of them.

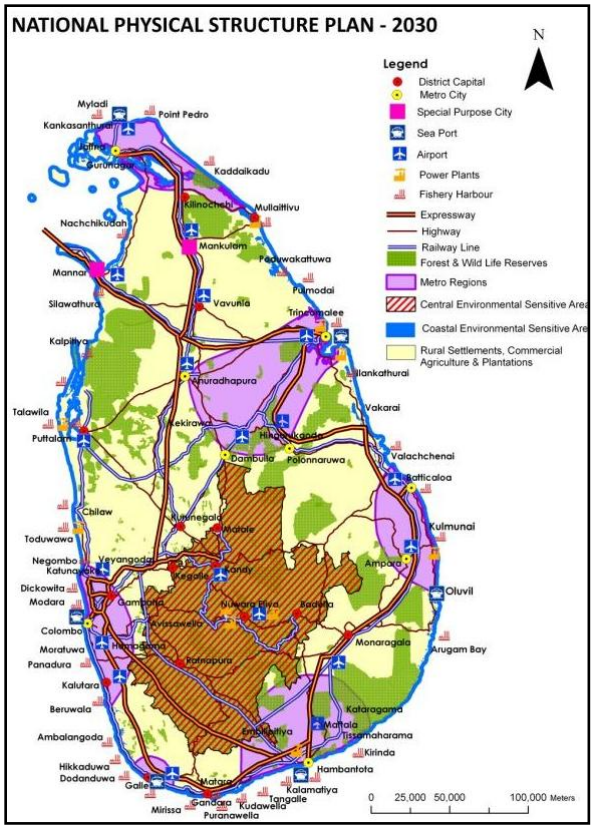


Figure 23: National Physical Structure Plan 2030
Source: National Physical Planning Department

7.1.3 Water Supply

Water supply is an important sector of human settlement development and industrial development of the Batticaloa Municipality. It is vital in the physical planning to identify the availability of this component within the municipality. Accordingly larger percentage of the citizens of Batticaloa municipality consumes well water for their day to day needs. Since ground water is easily accessible within the Batticaloa municipality territory there are no issues regarding consumption of well water. Further, as the individual plot sizes of the residence are comparatively large, there are no prevailing health hazards related to water supply.

Currently, the National Water Supply & Drainage Board (NWS & DB) has launched a public water supply scheme covering the Batticaloa town centre which has high dense population and uses.

Presently, drinking water is distributed to Batticaloa and its surrounding areas from the Unnichai reservoir which is located approximately 30 km for the town centre. This particular municipal pipe born water system began in 1917. This is considered as the 1st pumping station in Batticaloa district. Out of total households 18% of them receive water

from NWS&DB. Further Puthur, Thimilatheevu, Manthevu, Valaiyiravu, Sethukudha and Pillaiyaradi area receive limited supply of water during the dry season. The present major challenge to the NWS & DB is to find surface water sources to cater the increasing demand of the municipality. According to the population of the area water requirement is 72.000 M3 / day.

Consumer Distribution of Drinking Water

The distribution of water by NWS&DB and categories of consumers in the Batticaloa municipality has been shown in Table 24.

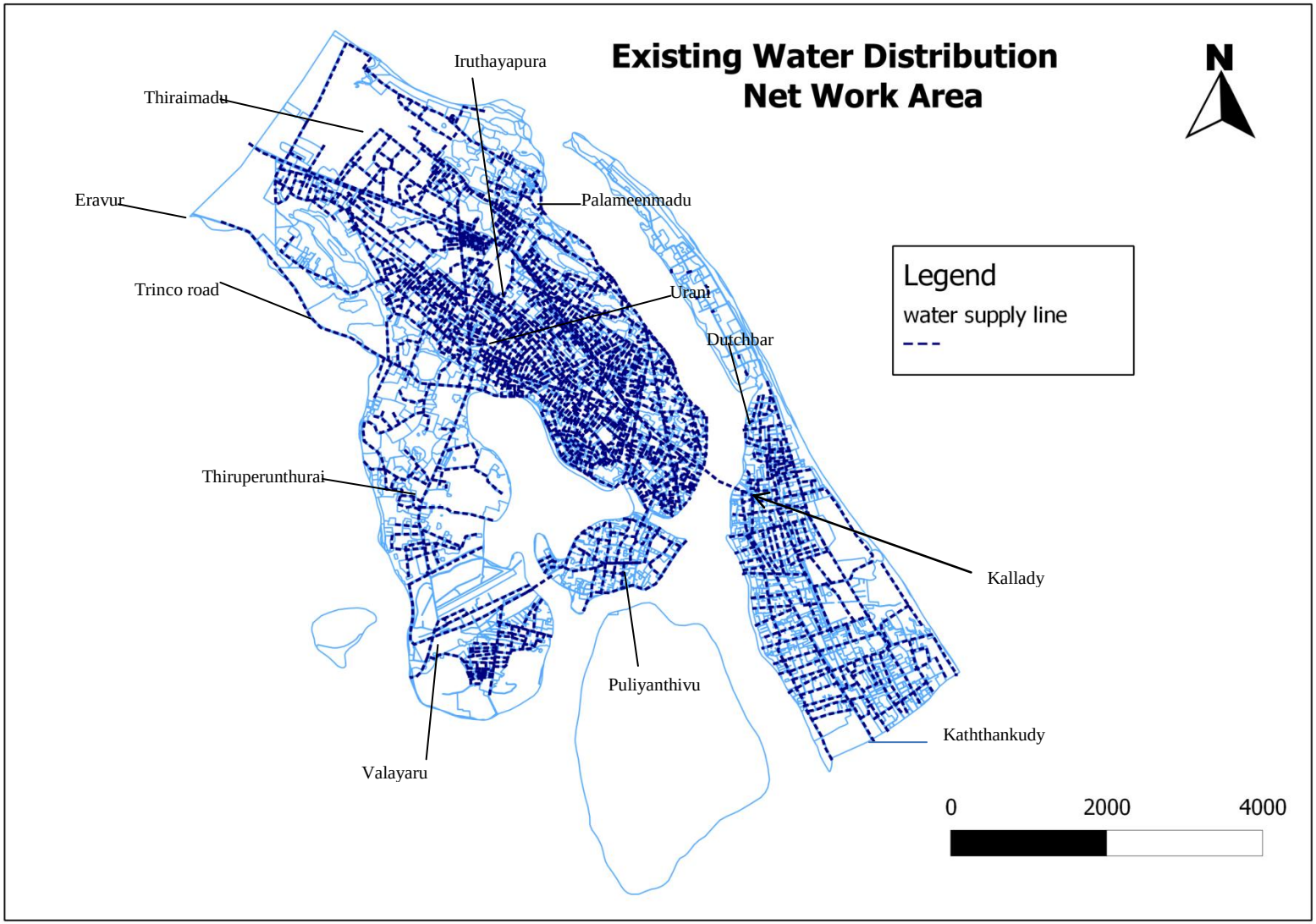
Uses	**Number of Pipe Line Connections**
Domestic	5,348
Commercial / Hotels	160
Govt. Institutions / Quarters	79
Stand post (common/toilet/bathing place & taps)	56
Police Station	51
Religious Places	45
Govt. Schools	39
Hospitals	06
Total	**5,784**

Table 24: Category of Consumers and Number of Connections Provide by NWS&DB

Water Supply Improvement related Projects and Proposals

Currently, the National Water Supply & Drainage Board (NWS & DB) has launched a public water supply scheme covering the Batticaloa town centre which has high dense population and uses.

Further, Secondary Towns and Rural Community based the Water Supply and Sanitation Project is also another project that is currently underway by the NWS & DB. This scheme will cover the urban areas of Batticaloa district starting from Thalankudah College of Education to Vandarumulai Eastern University. Presently the NWS & DB is seeking for funding agents to implement this project.



Map 14: Water Supply Coverage - 2011
Source: National Water Supply & Drainage Board
Not to Scale

7.1.4 Storm Water Drainage

Most of the main roads of the Batticaloa municipality have proper drains to carry storm water and household waste water. Both storm water and household waste water are eventually discharged to the Lagoon system. The length of drains within the municipality boundary is approx. 23.29 km. These drains are over 10 years old and therefore considered out dated. Also, certain areas within the Batticaloa municipality are identified without a drainage system.

One of the drainage lines which is in very good condition is the drainage network along the either sides of the Trincomalee-Battticaloa & Batticaloa– Kalmunai Road. The particular drainage network was constructed by RDA, whereas maintenance and cleaning is the responsibility of the Municipal Council. Out of total interior roads within the municipality, only few roads are provided with proper drainage system. Due to lack of width and depth of the drainage lines, flooding and stagnation of water at various places are experienced.

Issues related to Storm Water Drainage:

1. Poor maintenance of interior drainage systems.
2. Most of the drainage lines are silted with garbage.
3. The intensity of flooding due to inadequacy of storm water drainage system.
4. Certain basic technical defects are identified in the drain lines which are resulted the stagnation of water.
5. Discarded wastes, sand and soil are blocking the free flow of water.
6. Mosquito threats in water logging areas.
7. The gradient of drains has adversely affected the free flow of the storm water.

7.1.5 Electricity

Batticaloa municipality obtains electricity supply from national grid substation. At present this substation gets overloaded due to the high demand for electricity particularly in the peak hours. For this, the substation has to be augmented to a larger capacity station to cater the electricity demand of Batticaloa municipality and Batticaloa District.

All 48 GN Divisions in the Batticaloa municipality have high accessibility to electricity since these areas are located in the vicinity of the town area. Further, there are certain time periods in which certain areas get low level of accessibility to the electricity while rest of the areas get average accessibility level which varies between the composition of electricity usage.

Accordingly, electricity consumption for the domestic use shares 81% while street lighting shares 9%.

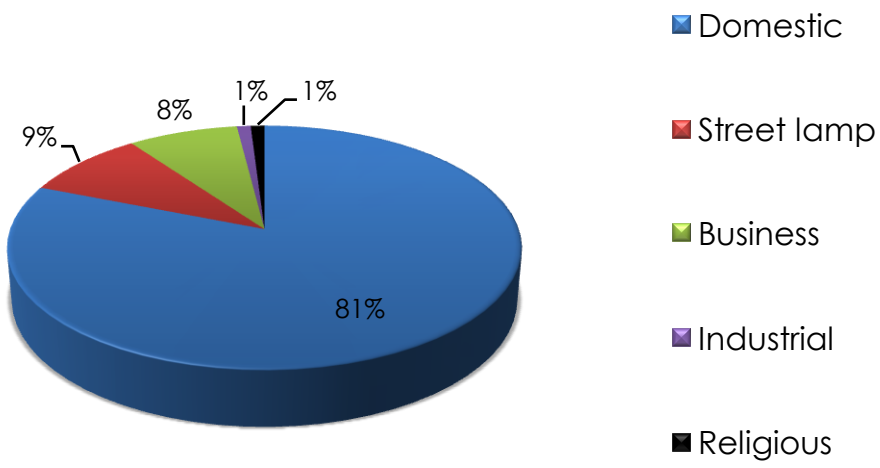
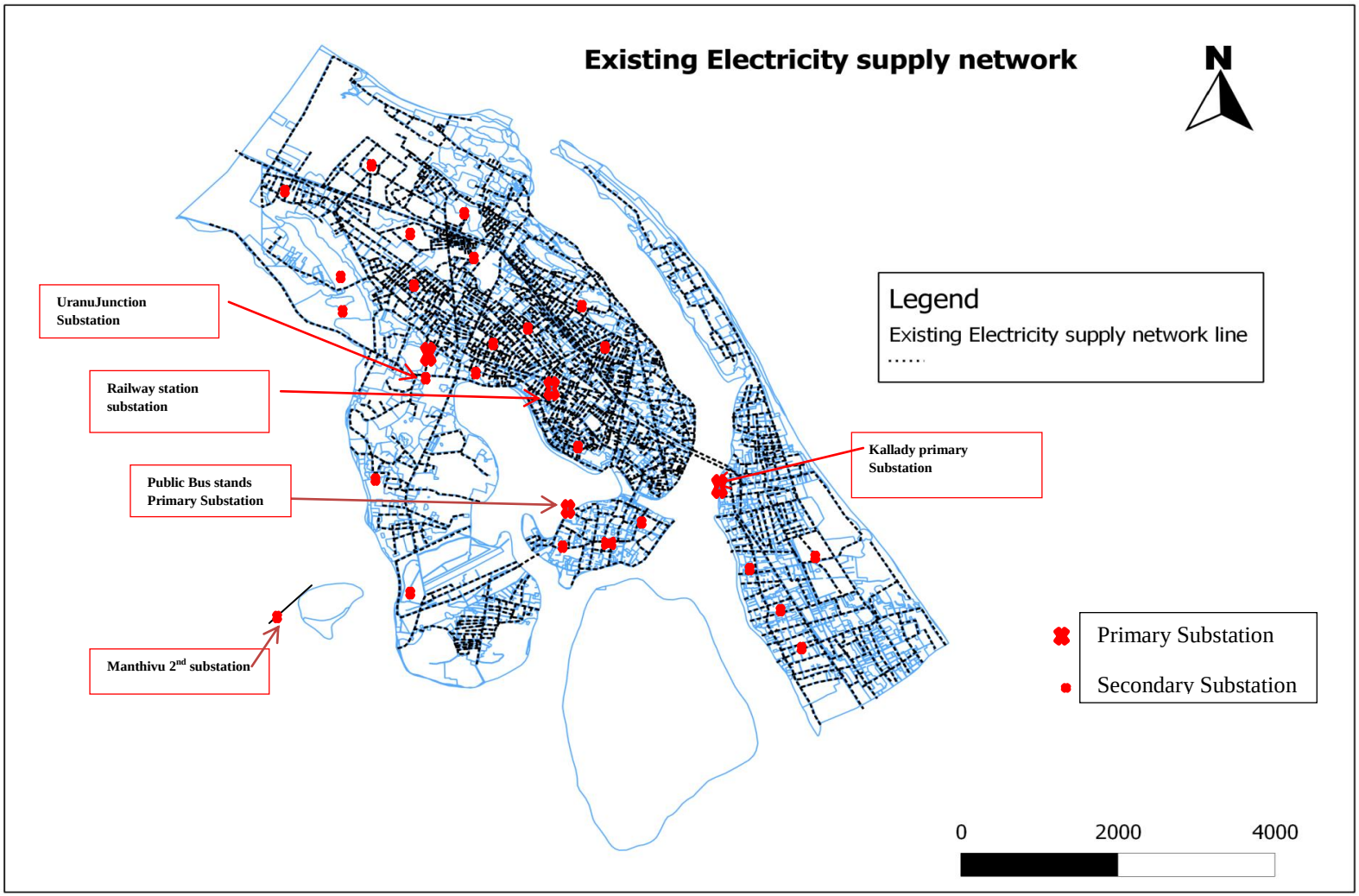


Chart 25: Composition of Electricity Usage
Source: Ceylon Electricity Board, Batticaloa

Electricity network of Batticaloa Municipality has been shown in the following map.

7.1.6 Telecommunication

Telecommunication plays a significant role in day to day activities of people within Batticaloa MC Area. Presently, Fixed Line Service Provider consists of one National Switching Centre in Colombo and District Switching Centers in districts. In Batticaloa city, telecommunication service is provided by Sri Lanka Telecom District Switching Centre with subscriber trunk and dialing facilities situated in Batticaloa. Direct dialing facilities available for any part of the country. The demand for Telecommunication facility has been grown day by day. Batticaloa Municipal Council Area has been fully covered by the Sri Lanka Telecom service and 90% of its service is provided for residential, commercial and institutional use. Meantime, presently about 76 subscribers are waiting for telecommunication facility after registration.



Map 15 : Electricity Network of Batticaloa Municipality
Source: Ceylon Electricity Board, Batticaloa
Not to Scale

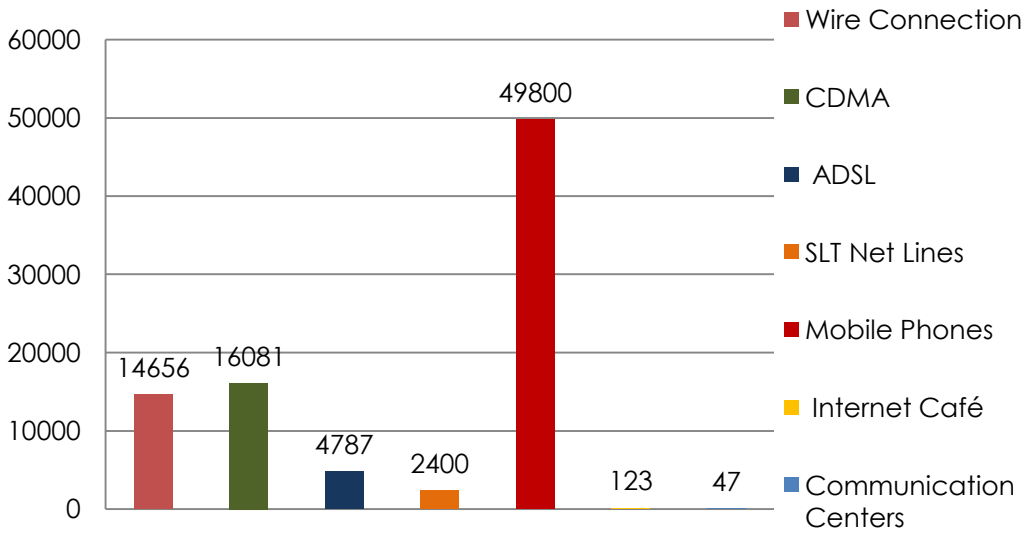


Chart 26: Category of Telecommunication Facilities and Number of Subscribers
Source: Sri Lanka Telecom Switching Center, Batticaloa

In addition to fixed line communication service, presently cellular services companies such as Airtel, Dialog, Mobitel, Hutch are also providing transmission networks in many areas. Even though, at present these mobile service providers covers Batticaloa town and suburbs, these mobile service companies plan to expand its service to entire Batticaloa District.

As per the number of subscribers who use telecommunication facilities, there are 49,800 mobile connections and 14,656 wire connections have been provided within the municipality by SLT. Chart 26 shows the category of telecommunication facilities and number of subscribers.

7.1.7 Solid Waste Management

Solid waste management has been a major requirement not only in the city of Batticaloa but also in the whole country. The rapid increase in the waste quantity is crucial today due to increasing population, high population densities in urban areas, changes in the lifestyle and changes in the economic activities.

Therefore, the garbage generation per day has also shown an increasing trend. 80 metric tons / per day is the solid waste collection in the Batticaloa Municipal Council Area. Also, considerable amount of money has been spent for the operation and management of garbage in Batticaloa city. The expenditure share is around 18-20 percent out of its revenue.

Some efforts have been taken by the Municipal Council with the support of donor agencies in order to overcome the solid waste management issues.

The Municipal solid waste collection is mainly a two – tiered system. Primary collection is comprised of road sweepers and handcarts from houses, hospitals, bus stands, schools, public markets, slaughter house and main roads. From these collection points tractors or tippers has been used to dispose garbage to dumping site.

Chart 27 shows the trend in solid waste generation year by year.

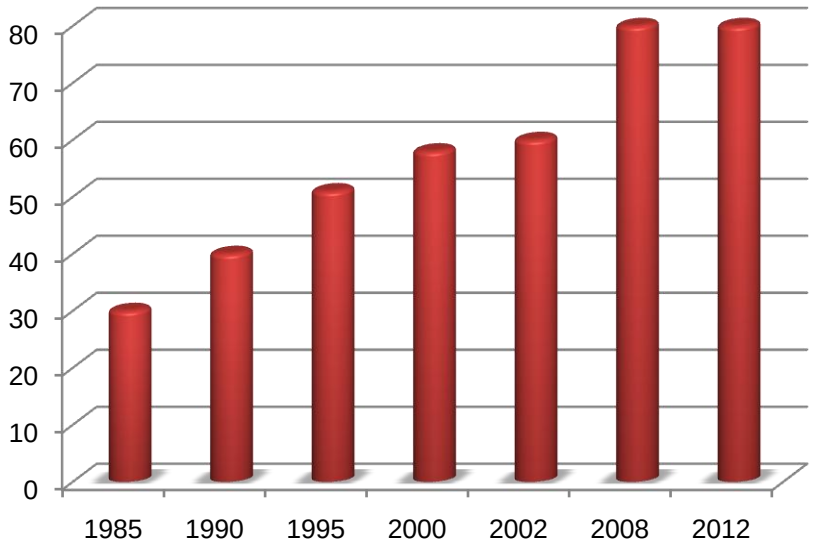


Chart 27: Solid Waste Generation in Metric Tones 1985-2012
Source: Batticaloa Municipal Council

The above information shows a drastic increase in the solid waste generation year by year. Daily waste collection has been dumped in artificially created dumping yard which is located in Thiruperunhurai, a former soil quarry. The particular area will be the only site to dispose the waste. It can be used for another 25 years or so.

Due to the lack of proper waste collection system, solid waste disposal is becoming a serious threat to the city. At present available man power includes PHIs, supervisors and labours. Apart from that, four wheel tractors, two wheel tractors, hand carts and bicycle carts are available for solid waste collection and transportation. Dumping domestic waste along streets, open areas, water logging areas without considering the adverse impacts to the community makes the solid waste management harder. Also, this situation has caused environmental issues such as air pollution and water pollution. In order to overcome this issue the Municipal Council has launched a community education and awareness programme to improve the commitment of the

community to keep the city clean. At the moment there are no recycling programs going on at the municipality. But, there is an opportunity to recycle paper wastes at Valachenai paper factory if wastes can be segregated successfully.

Composition of municipal waste collection is shown in Table 25.

Waste sources	Total number	Per capita generation	Total waste generation	Bio Waste	Non-bio Waste	Special waste	%
Residential	92,120	0.60	54,903.52	24,706.58	29,736.34	423.75	95.69 %
Institutions	206	3.24	667.65	191.29	476.38		1.16 %
Food establishments	126	2.91	366.16	191.94	173.71	0.50	0.64 %
General Stores	258	2.98	767.81	242.32	507.07	18.36	1.34 %
Industries	23	3.37	77.42	28.52	20.38	28.52	0.13 %
Markets	05	9.26	111.12	81.51	26.61		0.19 %
Recreation Center	25	1.62	40.55	9.88	30.67		0.07 %
Service centers	75	2.14	160.65	66.43	91.82	2.41	0.28 %
Special Waste Generators	88	2.79	245.43	109.65	135.78		0.43 %
Slaughter House	1	37.23	37.23	5.23	32.00		0.06 %

Table 25: Composition of Municipal Waste Collection - 2011

Issues Related to Solid Waste Management

1. Waste collections are not properly carried out.
2. Lack of capacity of the Municipal Council in terms of human resource and other facilities such as garbage disposal vehicles.
3. Less awareness among community to dispose garbage properly.
4. Disposal of waste water to the lagoon system.

7.2 Social Infrastructure Facilities

7.2.1 Education Facilities

Education requirement in Batticaloa municipality has been fulfilled by Government schools, Private schools and other higher educational institutions such as Eastern University, Open University of Sri Lanka and Technical College. These institutions are also contributing to the economic base of the municipality. Although the Eastern University is located outside the BMC area, it has high influence in the development on the city.

There are 40 schools located within the limit of Batticaloa municipality out of which 7 are national schools. The national schools are namely BT/Vincent high School, Bt/Methodist College, St Michaels College, St. Cecilias Girls M.V, BT/Hindu College, Sivanantha Vidyalayam, and Bt. Vivekanantha Girls Vidyalayam.

The other schools are administered by the Provincial Council. However, the administration of all these schools falls within Batticaloa Zonal Education Office. Following table indicates the category of schools and student population.

School Category	No. of schools
1AB	7
1C	5
2	15
3	11
Total	**38**

Table 26: Categorization of Schools
Source: Zonal Education Office – Batticaloa

Accordingly, out of 38 schools only 7 schools fall within the category of under Grade 1AB. Category 2 and 3 are consisted of 26 schools. According to the Zonal Education Office of Batticaloa, the highest teacher and student ratio is reported as 1:19 in the municipality area. Teacher student ratio of type 1A/B School is 1:23. It means that all schools in the BMC area are in satisfactory level as far as the teachers and student ratio is concerned.

Considering the facilities available in schools, eleven schools within the town have playgrounds. As the school playgrounds are not up to the standards, the inter school competitions are held in the Municipal Council playground. All school play grounds require improvements.

In terms of laboratory facilities, 37 schools have laboratories but need expansion and improvement.

14 schools are equipped with library facilities. 10 schools have temporary libraries and 8 schools have reading halls. However 6 schools have no libraries facilities.

A large number of students from nearby areas such as Arayampathi, Valachchenai and Eravur visit Batticaloa town daily for private tuition classes. The O/L and A/L private tuition classes are conducted in permanent and temporary buildings in and around the town. Many of the class rooms of these tuition centers are not provided with at least the basic facilities for the studies. These classrooms are congested as a large number of students gather in a small area. It's been identified that the location of these private tuition classes within the residential areas causes disturbances to the residents. Further, residents face difficulties due to the location of tuition classes in narrow local roads, unsafe and areas.

7.2.2 Health Facilities

Comparing to the other areas in the Batticaloa District, BMC area possesses better health facilities mainly due to the Batticaloa Teaching Hospital which is now upgraded and equipped with state-of-the-art health services. Further, private clinics, dispensaries, Ayurvedic and Western medical facilities are mostly available in the BMC Area.

Major health related institutions that are located in the BMC Area:

1. Batticaloa Teaching Hospital
   - Annually treated indoor patients - 221,792
   - Annually treated OPD patients - 72,338
2. C.D Koddamunai
3. R.H Palameenmadu
4. Ayurveda Center Dispensaries (2)
5. Private Hospitals (5)
6. Private Nursing Homes (2)

A large number of people from the surrounding areas such as Valachenai and Kalmunai visit Batticaloa Teaching Hospital in order to obtain heal services in Out Patients Department (OPD). It's been recorded that nearly 89% out of the total patients receive treatment from the OPD.

The following Specialist Medical Services are available at the Batticaloa Teaching Hospital:

- Surgery facilities
- Out Patients Department
- Maternity Unit
- E.N.T. Unit
- Pre-mature Baby Unit
- Anesthetic Unit
- Research Laboratory Unit
- X-ray Unit
- Dental Services Unit
- Diabetes Unit
- Anti-Malaria Unit
- Blood Unit
- Cardiology Unit
- Emergency treatment unit

However, the existing capacity of the hospital in terms of number of beds, equipments, and laborers is found not adequate to serve the increasing visitors to the hospital.

In addition, there are 05 private hospitals and two nursing homes available in the BMC area.

7.2.3 Religious Places

Religion based statistics in the year 2012 are: Hindus 70%, Roman Catholics 17%, Muslims 5%, Christians 8%, with a small numbers of Buddhists (1.1%) and others. In order to provide spiritual services to the above mentioned religious groups, there is also large number of religious places available throughout the BMC Area.

Below table shows the number of religious places within the BMC Area:

Hindu Temple	Churches	Mosques	Buddhist Temples
113	02	10	36

Table 27: Religious Places within BMC Area
Source: UDA District Office, Batticaloa

7.2.4 Recreational Facilities

Webber stadium is the major stadium within the BMC area. It is maintained by the Municipal Council at an annual coast of Rs.500,000. Absence of running tracks, indoor stadium facilities and swimming pool is the major drawback in the Webber Stadium.

Further, there are 10 community halls, 10 children playgrounds and 7 other play grounds are located within the municipality area. Out of the 10 children play grounds, only 1 is located within the town center. Others are located outside the town area without proper maintenance and facilities.

7.2.5 Common Facilities

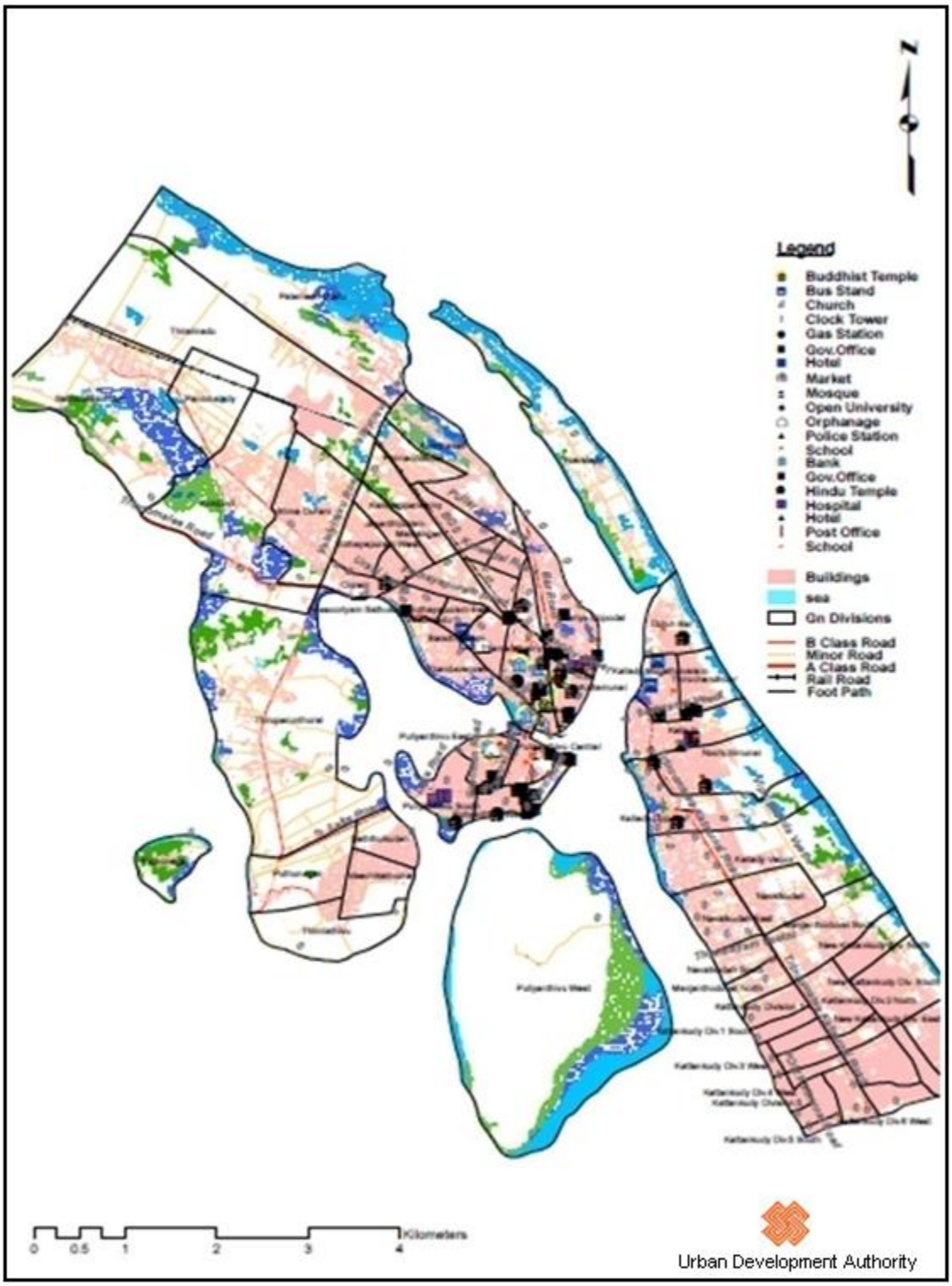
In addition, the following common facilities are available within the BMC Area:

Category	Number of Units
Cinema Hall	1
Public markets belonging to the BMC	4
Weekly Fair	1
Library	4
Reading Hall	7
Post office	17
Auditorium	1
Cemetery	18
Community Centers	21
Town hall	1
Public Toilets	11
Public wells	11
Public baths	2
Citizen parks	9
Playgrounds	7
Rest houses	1
Children Parks	14

Table 28: Available Common Facilities within BMC Area
Source: UDA District Office, Batticaloa

Public Markets play an important role in catering to the needs of the people. However, Batticaloa public market complex is not yet handed to the public use. The post offices at the Batticaloa town have Fax, Telephone and letter delivery facilities. 12 Sub Post Offices in the municipality have the Telephone facilities. Pillaiyarady sub post office has letter delivery facilities. Koddaimunai post office is categorized as Class I Post Office with Telephone facilities.

Social Infrastructure Map of Batticaloa MC Area



Map 16: Social Infrastructure Map of Batticaloa MC Area
Source: UDA District Office, Batticaloa

7.2.6 Issues related to the Social Infrastructure Facilities

1. The major challenges that are experienced by the Batticaloa Teaching Hospital:
    - Inadequate accommodation
    - Insufficient number of beds compared to the number of expectant mothers getting admitted daily for delivery
    - Insufficient number of beds available in the surgical wards results in discharging the patients prematurely
    - Shortage of hospital staff including chemists
    - Shortage of ambulances in working condition
2. Not properly maintained private tuition classes
3. Not well equipped play grounds within the town area

CHAPTER 08: ENVIRONMENT AND ASSETS

8.1 Environmentally Sensitive Areas

The city of Batticaloa is built on the shores of Sri Lanka's second largest lagoon. Because of its geographical position, the city presents a unique mix of nature, culture, and history all of which needs to be highly conserved.

The sensitive areas of Batticaloa MC Area include:

1. Lagoon system
2. Wetlands
3. Coastal reserve
4. Dry zone scrub jungles
5. Historical sites and buildings
6. Archeological sites and buildings
7. Retention areas

8.1.1 Lagoon System

Batticaloa District covers the area of approximately 2,600 sq km, of which 168 sq km is consisting of the lagoon, inland fresh water system and tanks. Batticaloa district has about 13,682 hectares of lagoons and associated with estuarine basins and 365 hectares of other water bodies. The mangrove vegetation along the lagoon covers and extents of 1550 hectares, and also is associated with an extensive lagoon system of about 11,500 hectares.

The Batticaloa Lagoon is the largest in the Eastern province of the three lagoons (i.e. Upparu lagoon and Valaichenai lagoon) and it is the third second basin estuary in Sri Lanka. Located between 7° 24’ - 7° 46’N, and 81° 35’ - 81° 49’E, is one of the most productive brackish water bodies in Sri Lanka.

The Batticaloa Lagoon extends from Kittangi/ Kalmunai in Ampara District in the south to Pankudaweli in Batticaloa District in the north. The lagoon is about 73.5 km long along the width varies from 0.5 km to 4 km. The deep, broad lagoon communicates with the sea by two narrow canals one at Palameenmadu and the other at Kallar. Batticaloa Lagoon is shallow water with irregular bottom topography. It shows the lowest water depth (0.3 m) and the highest (6.5 m). The average water depth of Batticaloa Lagoon is around 1.5m.

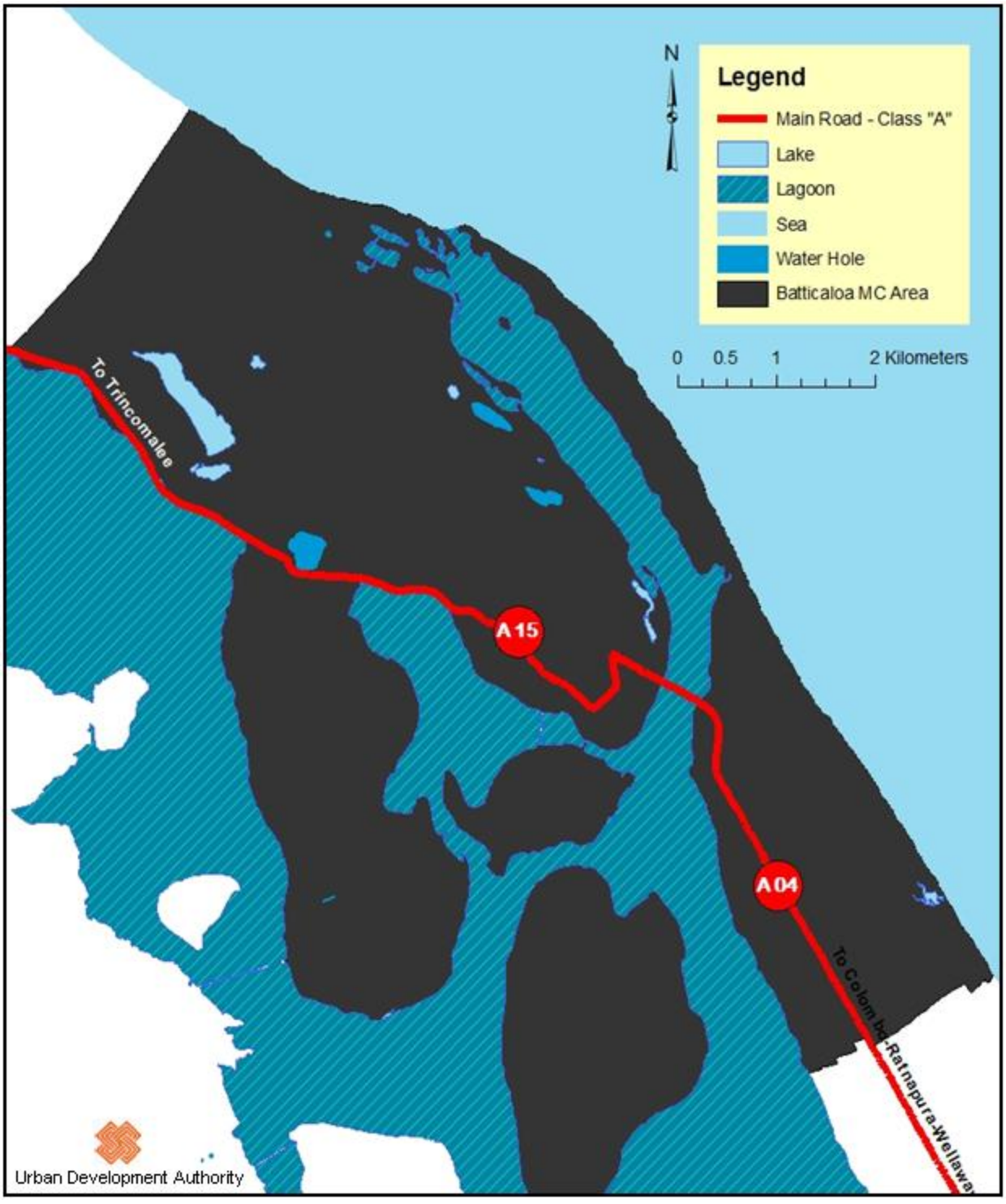
The below map no 17 shows the Lagoon system of Batticaloa:

Batticaloa Lagoon is identified as choked lagoon. It possesses two long and narrow entrance channels. This lagoon is rich with economically important variety of fish and shell fish, this is one of the richest livelihood resource for the fisher folks of these region, and also this lagoon declared as Ramsar site under convention on "Wetlands of International Importance".

8.1.2 Coastal Reserve and Sand Bars

Batticaloa MC Area possesses 12 km coastal stretch which is vibrant and sensitive in various means. The wave condition of the Batticaloa region is swell waves with wave lengths more than 50m. These spilling type waves are a clear indication of a very shallow near-shore area which means that the sediment movement rates are very high within this 300m width of the coast. Further, there is a large quantity of sand available on the south side of the coast and the dominant sediment movement direction (due to long-shore transport) is south-north. There are two tidal inlets for Batticaloa Lagoon, one at the northern end, where a Light House is constructed, and the other at the southern end of the lagoon in Kallar where two causeways are now replaced after 2004 December "tsunami" by elevated roadways with culverts for water exchange. Sand bar formation occurs periodically at the main lagoon inlet, at Batticaloa Light House end, in dry periods of south west monsoon.

Image 24: Sand Bars in Batticaloa



Map 17: Lagoon System of BMC Area
Source: UDA, District Office, Batticaloa

Map 18: Coastal Stretch of Batticaloa MC Area
Source: UDA, District Office, Batticaloa (Not to Scale)

8.1.3 Estuary

The Batticaloa estuary is the third largest brackish water system in Sri Lanka and is connected to the sea at two points. Extensive mangroves are found around the estuary whilst extensive sea grass beds are also a feature. Numerous areas of freshwater swamps are also found along with dry scrublands. More than 10,000 families depend on the lagoon fishery for livelihoods and food security. The Batticaloa estuary has served an important seaport for trade during the 19th century. The estuary stretches 56 km from north to south with a maximum width of 4km. The water body shows the characteristic features of a bar built estuary, indicating a high rate of siltation. It opens to the sea via two narrow channels during the wet season when the tidal amplitude is about 10 cm. The salinity varies from nearly 40 ppt near the mouth in some seasons, to 0 ppt in locations furthest from the mouth and close to freshwater sources. Generally, the northern half of the estuary is more saline than the south, and there appears to be two distinct sections separated by a constricted area less than 200 m wide near Kaluvanchikudiyiruppu village. The causeway at Koddaikallar also forms a barrier for freshwater and brackish water exchange.

Image 25: The Location of Estuary in Batticaloa

8.1.4 Mangroves

According to the Department of Coast Conservation, the total mangrove extent in the Batticaloa District is 1,421 Ha which takes 6.4% of the total land area. A significant portion of this mangrove fringe is situated in the Batticaloa Lagoon. The mangrove fringes are found mainly in Buffalo Island, Manthivu and Mattikkali. Commonly found species are Sonneritia caseolaris, Dolichandrone spathacea, Bruguiera gymnorrhiza, Avicennia officinalos and Cerbere manghas. The northern end of the lagoon at Pankudaweli consists an intact mangroves area and the species composition

includes Rhizophora mucronata, Sonneritia caseolaris, Dolichandrone spathacea, Bruguiera gymnorrhiza, and Avicennia officinalos.

Extensive areas which had intact mangroves earlier is now dominated by secondary, scrubby mangroves as Acrostichum aureum, along with small trees such as Cerbera manghas and climbers such as Derris trifiliata. Formally, these areas, especially the Batticaloa lagoon was almost entirely fringed by mangroves, but these have shown degraded and destroyed due to infrastructure development, aquaculture ponds and security activities. The below table shows the percentage share of mangroves in each DS Division of the Batticaloa District.

DS Division	Total Extent in Ha	%
Poraithivu Pattu	153	2.52
Manmunai South	272	4.47
Eravur Pattu	57	0.94
Manmuani West	103	1.70
Manmunai North	73	1.20
Manmunai Pattu	48	0.79
Korale Pattu	143	2.35
Porraithivu Pattu	78	1.28

Table 29: Percentage Share of Mangroves by DS Division
Source: Mangrove Study in the Eastern Province, Green Tech Consultants

8.1.5 Wetlands

The following wetlands are located in the Batticaloa city:

1. Sinnauppodai wetland (covering 7.2 Acres)
2. Thamaraikeni wetland (covering 2.25 Acres)
3. Kannamadu wetland (covering 0.45 Acres)

These wetlands act as reservoir to store surplus surface runoff water of the whole city. During dry periods, Batticaloa Lagoon discharges water into this wetland and maintains the water table. Further, these wetlands function as filter for salinity problem.

Total extent of wetlands is 134.4 acres. But now it has been reduced due to human intervention and illegal encroachments.

Following are the extent if encroachment in each wetland:

1. Sinnauppodai wetland -7.2 Acres (more than 1.5 ac encroached)
2. Thamaraikeni wetland -2.25 Acres (more than 1.45 ac encroached)
3. Kannamadu wetland -0.45Acres (completely encroached)

As a result of wetland encroachment the whole environment has been threatened by:

1. Flooding during rainy season.
2. Reduction in ground water table and salinity during dry season
3. Adverse impact in Bio diversity
4. Destruction of mangroves

8.2 Culturally and Archeologically Important Sites and Buildings

8.2.1 Batticaloa Dutch Fort

The Dutch Fort is located at the tip of the tortoise-shaped Puliyantheevu island. Originally a Portuguese settlement, the Fort of Batticaloa was first constructed in 1628 as a trading and administrative centre. The Dutch had arrived in 1602, drawn to the prospects of trade and the abundance of pepper and cinnamon grown by the local community. However, it was not until King Rajasinghe in Kandy urged Dutch intervention that the European colonial power took action, capturing the fort in 1638 and establishing sovereignty in the region. Bordered by a moat on two sides and the lagoon on the other, the stone fort remained in Dutch hands for nearly two centuries before the British entered the country in the late 18th century and took control of the Dutch fortifications. The site has significant religious implications dating back to the Ruhuna Kingdom. Declared as a monument in danger by the World Monument Fund in 2010 – sea erosion, insufficient funding, encroaching development, and the tsunami of 2004 have all conspired to damage the structure and its surrounding fortifications.

Image 26: Images of the Condition of Batticaloa Dutch Fort

8.2.2 Kallady Steel Bridge

Kallady Bridge (also known as the Lady Manning Bridge) is a road bridge in Batticaloa District. It crosses the Batticaloa Lagoon. The bridge is part of the A4 Colombo-Batticaloa highway. The bridge was built in 1924 during British colonial rule. The bridge was named Lady Manning Bridge in honour of the wife of William Manning, the British Governor of Ceylon. It was the oldest and longest iron bridge in Sri Lanka. On average 10,000 vehicles crossed the narrow, single lane bridge daily. Batticaloa's singing fish legend is associated with the bridge. In 2006 plans were drawn to build a new bridge parallel to the old one due to the unstable condition of the old bridge.

Image 27: View of Kallady Bridge in Batticaloa

8.2.3 Batticaloa Light House

Batticaloa Lighthouse is situated near the estuary in Palameenmadu, was built in 1913 and is 28 meters high. The light house is located six kilometer from the heart of Batticaloa town and accessible through the Bar Road which runs to Palameenmadu from Batticaloa. The site extends on two acres of land. North East to this site is the sea and the east is the Kallady Bridge.


Image 28: View of Batticaloa Light House

8.2.4 Methodist Central College

The Methodist Central College is situated near the Methodist Church in Chapel Road, extending over a quarter of an acre. Wlliam Ault, a British Priest who arrived in Batticaloa in 1814, founded this college and the Church. This is credited as the first Methodist College in Sri Lanka. There were only five students at the beginning of the college. Three of them were children of Members of the British Army and the two were Sri Lankans. The original building was constructed in 1814 which does not exist now.

8.2.5 Maamangeswaram Pillaiyar Temple

This particular kovil belongs to the period of 3rd Century AD. According to the records, Prince Rama who saved Seetha rested here prior to his return to India. Maamângeshwaram Pillaiyar kovil exhibits old Hindu architecture. The annual festival is held in July which is one of the prestigious festivals in Batticaloa District.

ımage 29: The Pond of Mamangeswaram Pillayar Kovil and the Hindu Pooja at the Kovil

8.2.6 St Michael's National School

Founded by the British Priest, Rev. Francis Xavier, O.M.L., in 1873, the School is located 100 meters north of the Batticaloa town. Built on seven acres land, it is one of the oldest schools in Sri Lanka and the second oldest in the Eastern Province. Named after its architect, "Bonear Block" is the largest building in the school and exhibits British architecture. The cyclone of 1978 destroyed the roof of the school and has been renovated with asbestos sheets at present.

Image 30: Front view of the St .Michael's National School

8.2.7 Traditional Houses

Traditional houses in Batticaloa also manifest the ancient culture of Batticaloa. Since Batticaloa was rule by Portuguese, Dutch and British, the architecture styles which belong to the above periods can be seen in certain traditional houses. Certain houses are located in Bar road, Hospital Lane, Love Lane and in Mudaliyar Street. The traditional houses in Bar Road were built in 1900s and the traditional houses in Mudaliyar Street were built in1910.

Image 31: The Traditional House in Bar Road

Image 32: The Traditional House in Muthaliyar Road

Image 33: British Period House – Presently its Government Agent's Residence

8.3 Hazard in and around the City

Batticaloa city is frequently affected by various hazards such as flash floods, cyclone, tsunami, storm and sea level rise, etc. The following table shows the occurrences of various hazards in the Batticaloa area.

8.3.1 Floods

Most part of Batticaloa District gets flood during heavy rainy season. Particularly the road network in the town area is filled with flood and they become inaccessible. This particular situation has happened many times in year 2000, 2005, 2006, 2007, 2009, 2010 and 2011. Batticaloa MC area has experienced the largest flood during the last 100 years during December 2009 to January 2010. This flood resulted loss of life and property, also major damages in the emerging coastal tourism industry. Flood situation causes large patches of polluted stagnant water in low-lying areas of the city, and it generates debris,

mud, garbage and scorched vegetation thrown everywhere in the city. Sanitation of the area also becomes an issue due to floods. Most wells in the BMC area get polluted and become saline. Analysis done by the Disaster Management Center has revealed that there is a strong trend of monsoon rainfall increase in Batticaloa Municipal Council area which is 28% and correspondent increase of occurrence of minor floods.

Hazard	Period of Occurrence	Return Period	Locations	Year & Month
Floods	Flash floods North – East Monsoon period (Dec–Apr)	Every year	Thiraimadu Saththurukondan Amirthakali Dutch Bar Navalady Manjannthoduvai Navatkudah Puthunagar Thimilathivu Veechikalmunai Sathukudha PalameenMadu Puliyanthivu 50-75m surrounding area of lagoon	Not available
	Minor floods (100 – 150 mm)	3 – 5 years		2004 / September 1997 / March 1994 / January 1994 / November 1993 / December 1989 / September 1987 / February 1986 / January 1980 / November 1971 / January
	Major floods (150 – 250 mm)	10 – 20 years		2009 / December 1999 / December 1978 / December 1957
Cyclones	Cyclonic Storms	30 years	High impact to Costal Belt	1967 1931
	Cyclones	30 years	Moderate impact to Entire BMC Area	1907 1978 2000
Sea Level Rise (Coastal Erosion)	Frequently occurs	Frequently occurs	Coastal areas of Navalady Dutch Bar Thiruchenthoor Nochchimunai Palameenmadu	*Not Available*
Tsunami	Unpredictab--le	Unpredictable	Coastal Belt	2004 / December

Table 30 Hazard Inventory of Batticaloa Municipality
Source: Disaster Management Center

8.3.2 Tsunami

The first tsunami hit was experienced in Batticaloa district in December 2004. Large part of the town was seriously damaged and the fisheries settlements which were located close to the coast were washed off. Not only the fisheries settlements but their fishing equipments including boats, nets, and engines were damaged. Tsunami disaster busted most of the physical infrastructures of the area such as road network, electricity, bridges etc. Fishing infrastructure such as harbors, anchorages and landing sites and services located close to the sea also suffered. About 2,800 deaths reported 630 persons missing and 5,132 houses fully damaged and more than 53,400 persons were affected and located in schools, religious places and other buildings. Out of 49 GN Divisions in the city, 09 GN Divisions in the coast were affected by Tsunami.

8.3.3 Cyclones

In 1978 cyclone hit the entire Eastern Province and Batticaloa city. The areas were had been badly affected. Hundreds of people died and injured, large extent of agricultural lands became unusable. Since there is no record on cyclone prone areas in Batticaloa city the entire Batticaloa municipality has been considered as prone to cyclone hazard. Map 21 shows the cyclone paths of Sri Lanka.

8.3.4 Sea Level Rise

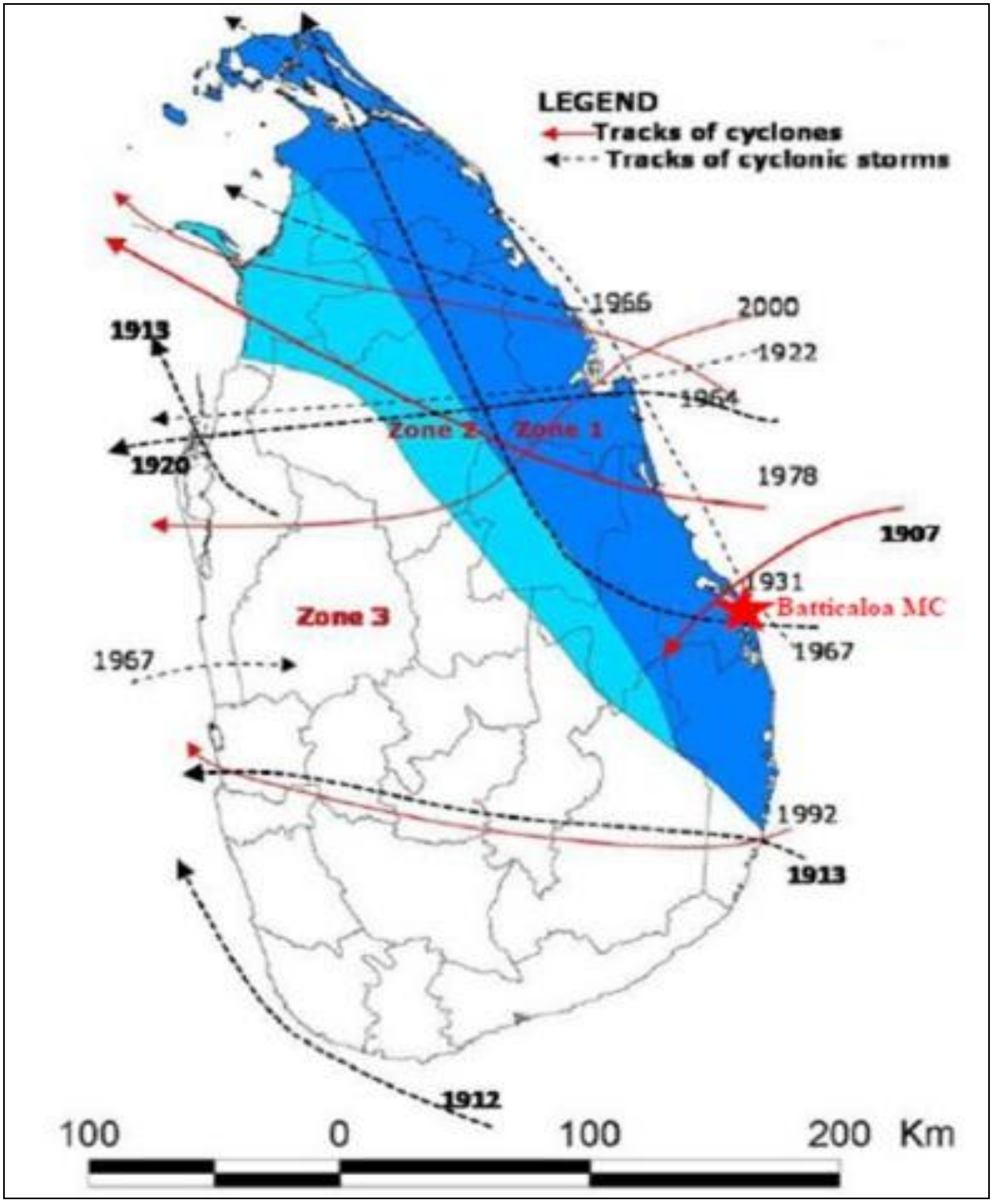
Sea level rise has been recorded in many coastal part of the Batticaloa peninsula. Palameenmadu, Navalady, Dutch Bar and coastal Manjanthoduvai are certain risk full areas due to sea level rise. Map 22 shows the sea level rise areas within the Batticaloa MC Area.

8.3.5 Multi Hazard Risk Assessment

Since, Batticaloa city is vulnerable for natural hazards, which threat the city and generates adverse impacts, disaster risk reduction measures need to be developed in order to reduce the risk face by the human settlements of the city. Therefore, Reduction measures must be incorporated into the Development Plan to make the city as a disaster resilient city. Hence, Multi – Hazard Risk Assessment is an essential prerequisite for decision making on preparing of disaster risk reduction plan. Composite hazard mapping brings together the results from the hazard, vulnerability and capacity assessments in order to provide an overview of the hazard risk faced by the Batticaloa city and following map no 23 shows the composite hazard risk zones of Batticaloa MC Area.

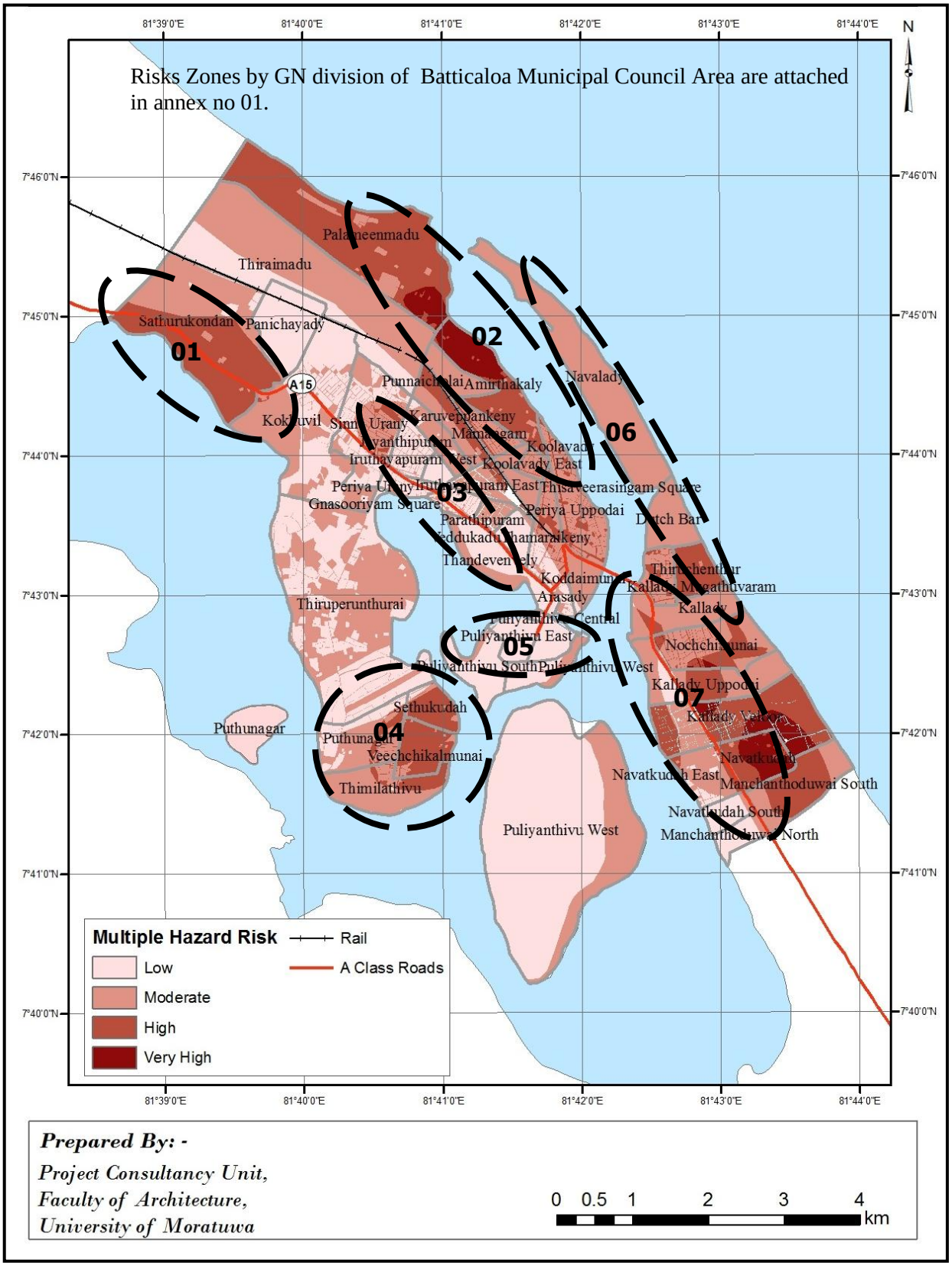
Map 19: Flood Hazard Map of BMC Area
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

Map 20: Tsunami Affected Area of BMC
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013



Map 21: Cyclone Paths of Sri Lanka
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

Map 22: Sea Level Rise in BMC Area
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013



Map 23: Composite Multiple hazard Risk
Source: Batticaloa Disaster Risk Reduction and Preparedness Plan, UN Habitat, 2013

CHAPTER 09: SWOT ANALYSIS

9.1 SWOT Analysis for Batticaloa Municipal Council Area

Factor	S	W	O	T
1. Physical Setting of the City	Being a coastal city, it has access to coastal resources (economic uses such as fishing and tourism)	Existence of highly sensitive undevelopable land areas. (Mangroves, wetlands, scrub jungles, and lagoon catchments are undevelopable.)	National Physical Plan 2030 has proposed Batticaloa to be the Metro City within the Eastern Metro Region	Vulnerable to disasters such as floods, tsunami, cyclone and storm wind.
	Existing environmental assets (mangroves, wetlands, scrub jungles)	Flat terrain leads to quick flash floods.	Ocean based and beach based Tourism opportunities.	Increasing sea level rise is eating up the coastal land areas of the town.
	Existence of series of Lagoon system (economic uses such as fishing and tourism)	Certain part of the Lagoon and wetlands are polluted due to illegal garbage dumping.	Inland, coastal and marine fishing opportunities for locals.	Illegal land encroachments on the sensitive areas.
	Flat terrain of the Batticaloa city is ideal to establish settlements.			
	Holds a distinct geographic identity locally and nationally.			

Factor	S	W	O	T
2. Culture and Heritage of the City	Since the city belongs to pre-colonial period it is considered as a historic city.	The heritage assets are not well maintained and conserved.	Upcoming Batticaloa Dutch Fort Conservation Project.	The vulnerability of the city to various disasters is the major threat to the heritage assets.
	Possesses variety of cultural tangible and intangible assets.	Natural heritages such as wetlands and scrub jungles are encroached by the locals.	Increasing awareness programs of many authorities to conserve the cultural heritages.	Improper and profit oriented tourism activities.
	Possesses many kinds of natural heritages.	The multi-ethnic community is not integrated socially.	Increasing awareness on cultural tourism in the proposed Eastern Tourism Development Plan.	Upcoming development trend makes the land more valuable. The potential change of use of land may be a threat.
	It is a multi ethnic city that celebrates different cultures and religions.	The most important heritage, the Dutch Fort, is occupied by the city administrative activity which has created more damages to the heritage.		
	The heritage assets of the city are not severely damaged during the civil conflicts and tsunami.			

Factor	S	W	O	T
3. Population, Demography and Employment	The total population of the BMC area has shown a steady increasing trend. (Growth Rate increase up to 2.07%)	30% of the total population can be identified as depended population.	Upcoming National Physical Plan 2030 development proposals will benefit the growing population.	There is a high proportion of population within 15-49 age category. This will create more demand for jobs and housing.
	High attraction of commuters, and visitors to the city to receive education, health and administrative services.	48% unemployed population has attained education below GCE O/L.	Upcoming education, infrastructure, and housing projects of the BMC	
	33% of the total population is falling within active labor force category.	14% of unemployed population has completed GCE A/L.		
	Nearly 52 % of the poverty population is now living on the good subsidy scheme.	20.5% of the population in the Batticaloa district is living beyond poverty line.		
4. Land Use	The built up areas are located in a compact pattern which will conserve the surrounding sensitive land uses.	Being a peninsula and surrounded by lagoon and sea, Batticaloa has many forms of highly sensitive areas which are not suitable for development	Upcoming planned development and growth management strategies of the NPP 2030.	Unplanned settlement areas are continuously in threat of disasters.
	The land areas in the coastal part of Batticaloa are moderately filled with settlements particularly after the tsunami devastation.	The existence of large proportion of natural land uses in 1990s and the gradual expansion of the settlement areas into the natural land resources in 2000s.	Increasing awareness on the environmental conservation.	Upcoming development projects may encourage more filling of sensitive lands.

Factor	S	W	O	T
	The settlements are located in between blue and green which gives the natural beauty, identity and safety to the city.	Land values are very low in the disaster prone areas		
	Agricultural uses and vegetation covers are one of the dominant land uses which will add more economic value to the city.	13.1% of occupants do not have clear ownership for their land.		
	Significant proportion of public land (282 Ha) is also available in the MC Area.			
5. Housing	High increase in the housing units based on the increase in the population. (5% increase)	Housing shortage is 1,109 within the BMC Area.	There are 4 housing Programmes currently being undertaken in the BMC Area. (Gamaneguma, Janakirula Grant, IFAD)	Threat of illegal encroachments due to upcoming development in the city.
	Batticaloa MC Area has less improvised and semi-permanent housing.		1,506 improvised housing units will have to be converted to permanent housing units in 2015.	Instability in providing necessary social and physical infrastructure for the increasing population.
	Low income houses (huts/shanties) share is only 2%.			
	BMC Area has the highest housing density in Batticaloa District.			

Factor	S	W	O	T
5.1 Housing Amenities	All the households receive safe drinking water.	3% of household are using shared toilets.	Upcoming NWS & DB's Public Water Supply Scheme and Secondary Towns and Rural Community based Water Supply and Sanitation Project.	Lack of water availability during dry seasons when the Unnichai tank is dried up.
	Majority of the household (90%) use electricity as their major source of lighting	1% of householders do not have proper toilet facilities.		Diseases to the communities due to poor sanitation.
6. Economic Base of the City **6.1 Agriculture**	The total extent of paddy lands in the MC Area is 1,838 Acres in year 2010.	Sensitive land areas are converted into paddy lands by the locals.	Paddy lands are irrigated under the Galoya Irrigation Scheme	Flood damages to the paddy lands and vegetable cultivations land.
	A drastic increase in the agricultural production during 2006/07.	No proper marketing facilities for farmers and fishermen.	6 Palmyra Product Training Centers located in the BMC area.	Irregular rain pattern harm the cultivations
	Highland crop cultivations, vegetable cultivations, permanent crops cultivation and coconut production contribute to agriculture.	No sophisticated technologies are used for farming.	Upcoming agriculture related projects under NPP 2030.	
	38 acres of coconut cultivation in 2010.			

Factor	S	W	O	T
6.2 Fishing and Prawn Farming	Batticaloa District contributes 9% for the fish production in Sri Lanka. The fish production of BMC area has been increased by 34% between 2010 and 2011.			Upcoming ocean based tourism activities may harmful to the fishing base.
	Increasing demand for prawn and dry fish products.	Illegal prawn farming and fishing.		Less coastal access to the fishery community which was relocated to Thiraimadu after tsunami.
6.3 Industry	Increasing contribution of Industrial Sector. (Increased by 40% in 2011)	Less industrial expertise among local people.	National Physical Plan 2030 has proposed Industrial Township in Batticaloa.	Improper waste management and waste disposal in Lagoon system.
6.4 Tourism	Existing tourism industry in the city is a major economic sector.	Poor level of food and accommodation services for the tourists and visitors.	National Physical Plan 2030 has proposed Battocaloa District to be a Beach Tourism Development Area.	Inappropriate use of the natural resources for tourism may harm the environment.
7. Infrastructure **7.1 Road, Railway and Air Transport**	Very well connected city locally, regionally and nationally through road network and railway network.	Lack of pedestrian pavements and poor condition of pedestrian pavement	National Physical Plan 2030 has proposed railway expansion from Batticaloa to Hambantota via Ampara.	Certain road widths are not adequate for the increasing uses.
	More than 500 private buses and 320 public buses are operated within BMC Area.	There are no designated building line and the street line for the interior roads within the municipality.	National Physical Plan 2030 has proposed expansion of Vallayaravu Domestic Airport.	

Factor	S	W	O	T
7.2 Drainage	Most of the main roads of the Batticaloa municipality have proper drains to carry storm water and household waste water.	Poor maintenance and outdated drainage systems in interior roads.		Poor drainage network causes flash floods in the settlement areas.
7.3 Solid Waste Management	BMC's regular garbage collection in residential and commercial areas.	Garbage generation per day has also shown an increasing trend (80 metric tons / per day in the BMC Area)	Projects of the BMC l with the support of donor agencies to overcome the solid waste management issues.	Increasing threat of air pollution and water pollution
		People dump domestic wastes along streets, open areas, water logging areas.	Community education and awareness programme of the BMC	
		Lack of capacity of the BMC in terms of human resource and other facilities.	The paper wastes can be recycled at Valachenai paper factory	
7.4 Education	40 schools, 7 national schools and 3 technical universities within BMC Area.	Laboratory facilities of 37 schools are not up to standard.	Upcoming projects of Zonal Education Office.	Students too much depend on private tuition classes.
	Teacher Student Ratio of schools is in satisfactory level.	14 schools are having proper library facilities.		
7.5 Health	Batticaloa Teaching Hospital offers state-of-the-art health services.	Lack of capacity of the hospital in terms of number of beds, equipments, and laborers.		Increasing dependent population will require more health services.

9.2 Recommendation made on SWOT Analysis

Factor	RECOMMENDATIONS
Physical Setting of the City	1. Carry out protective measures to the sensitive areas on the city. 2. Regulate settlement pattern to reduce encroachments in sensitive areas. 3. Optimize the economic usage of natural assets. 4. Build safe communities in the coastal region.
Culture and Heritage of the City	1. Awareness programs for locals and visitors about the heritage protections. 2. Regulate natural and cultural heritage tourism activities. 3. Monitor the land uses and values in the heritage sites. 4. Shift the existing administrative center out of Dutch Fort.
Population, Demography and Employment	1. Increase the employment rate up to 90% for educated population. 2. Promote public housing projects and subsidies up to 70% 3. Regulate development activities to promote social equity. 4. Promote senior healthcare facilities up to 85%.
Land Use	1. Introduce proper mechanism to conserve sensitive areas. 2. Regulate settlement expansion pattern to ensure safety and sustainability. 3. Introduce protective development strategies to the disaster prone areas. 4. Reduce infrastructure provisions in the sensitive areas and provide better infrastructure services to the developable areas.

Housing and Housing Amenities	1. Introduce affordable public and private housing projects 2. Infrastructure management according to the increasing population. 3. Awareness programs to locals regarding sanitation and health. 4. Alternative drinking water plans during dray seasons.
Agriculture and Fishing Productions	1. Regulate the change of use of sensitive lands into agricultural lands 2. Introduce proper marketing facilities to the agricultural and fishing products. 3. Introduce technical know-how to the farmers 4. Regulate the natural and cultural based tourism activities.
Industry and Tourism	1. Provide vocational training to the youngsters, women and unemployed people. 2. Regulate the services of visitors and tourists 3. Introduce proper waste management and recycling systems.
Infrastructure Provisions	1. Improve the conditions of the roads and sidewalks up to 100% 2. Enforce building line and street line regulations strategically. 3. Carry out drainage upgrading programs 4. Introduce proper garbage and recycling mechanisms through awareness. 5. Improve the healthcare facilities up to 100%.

Annex No 01

Risk Zones by GN Division - Batticaloa Municipal Council Area

Risk Zone -01:	Sathurukondan-Flood, Cyclone
Risk Zone -02:	Palameenmadhu, Mugathuvaram, Amirthakali, Periyauppodai, Sinnauppodai-Flood, Tsunami, Cyclone
Risk Zone -03:	SinnaUrani,Periyaurani, Iruthayapuram, Jayanthipuram, Karuwapankerny, Poompogar.- Flood, Cyclone
Risk Zone -04:	Sethukudha, Thimilaithivu, Veechchikalmunai, Puthunagar-Flood, Cyclone
Risk Zone -05:	Puliyanthivu-Flood, Cyclone
Risk Zone -06:	Navalady, Dutch Bar, Thiruchchendor, Kalladyveloor, KalladyMugathuvaram-Tsunami, Cyclone, Flood**.**
Risk Zone -07:	Kallady uppodai, Kallady, Nochchimunai, Manchenthoduvai, Navadkudha-Flood, Cyclone.